Vol. II

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1915

No. 857

ALBERT OTTINGER, AS ATTORNEY GENERAL OF THE STATE OF NEW YORK, APPELLANT,

vs.

CONSOLIDATED GAS COMPANY OF NEW YORK

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK

FILED OCTOBER 19, 1915

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[fol. 1224] Consolidated Gas Company of New York

Amounts Charged Against Reserve Representing Renewals and Replacements

Year	Cubic feet of gas sold	Amount charged against reserve	Per M. cu. ft. sold
1905	13,283,163,767	$282,219.67	$02.12
1906	13,879,727,705	200,517.06	01.44
1907	14,752,230,549	395,869.56	02.69
1908	14,381,174,336	455,246.77	03.16
1909	15,298,837,062	364,028.05	02.38
1910	16,044,272,700	556,525.35	03.47
1911	16,175,163,200	489,437.81	03.03
1912	16,641,107,600	646,528.82	03.88
1913	16,553,735,700	776,138.48	04.69
1914	16,508,900,700	1,338,582.14	08.11
1915	15,679,825,300	881,840.36	05.62
1916	16,295,126,600	554,585.03	03.40
1917	16,891,064,100	358,679.29	02.12
1918	18,029,245,000	601,450.69	03.33
1919	18,576,440,300	462,580.64	02.49
1920	20,753,111,600	784,848.33	03.78
1921	19,396,607,100	259,848.41	01.34
1922	20,580,285,600	1,100,845.34	05.35
1923	24,057,694,200	1,278,466.70	05.31
	323,777,713,119	$11,788,238.50	03.64

The Astoria Company accrues to the reserve one half cent per thousand cubic feet of gas made. These amounts that I have shown in the tabulation with respect to the actual retirement expense of the Consolidated Gas Company do not include the amount of the retirement expense in connection with the plant and properties of the Astoria Light, Heat & Power Company. I have prepared a table showing [fol. 1225] the amount of withdrawals charged against the Renewals and Replacements Reserve of the Astoria Light, Heat & Power Company. This is correct according to the books of the Astoria Light, Heat & Power Company. It shows the actual amount year by year from the beginning of the history of this company. Speaking of Astoria, the one

half cent per M cubic feet of gas has been made the basis for the entries since at least 1915. I am not sure that I can say from memory what it was before that. The Astoria company charge is based on make, and that is adopted in the shape of a resolution by the Board of Directors of the Astoria Company and transmitted to me. Those figures in the Astoria tabulation are actual. This represents the actual retirements from the beginning of the company.

Astoria Light, Heat and Power Company

Amount of Withdrawals Charged Against Reserve Representing Renewals and Replacements

Year	Amount
1906 (Dec. 3-31)	$7,287 83
1907	29,752 47
1908	12,904 26
1909	13,170 50
1910	13,930 23
1911	16,841 72
1912	20,057 55
1913	20,597 64
1914	31,869 40
1915	33,761 52
1916	42,165 40
1917	15,992 37
1918	29,124 55
1919	30,269 77
1920	31,130 11
1921	156,218 94
1922	28,758 55
1923	
	$533,832 81

Referring to the charges made by the Consolidated Gas Company to its affiliated gas companies for the reimbursement of expenditure in connection with services rendered [fol. 1226] by the Consolidated Gas Company to those affiliated companies. I have prepared a table of such charges for the years 1922 and 1923.

(The tabulations are spread upon the record, as follows:)

Consolidated Gas Company of New York

Charges Made to Affiliated Gas Companies for Reimbursement of Expenditures Regularly Incurred by Consolidated Gas Company for the Benefit of Affiliated Gas Companies, Exclusive of Certain Charges for Jointly Used Facilities During the Year 1922.

Engineering and Superintendence	$72,829 27
Maintenance of Department of Mains & Services	227,943 76
Maintenance of Promotion Department	116,357 57
Maintenance of Department of Claims & Arrears	45,438 95
Maintenance of Chemical Department	72,482 09
Maintenance of Pressure Gauges	5,057 53
Operating—63rd Street Gas Storage Station	58,716 14
Operating—Kingsbridge Gas Storage Station	20,658 67
Maintenance of General Office Restaurant	32,452 99
Maintenance of Meter Shop School	1,818 73
Pumping Drips	3,149 04
Operating General Telephone Switchboard	29,457 98
Services of Chief Engineer, Advertising Manager and Steam Engineer, and Special Meter Department Engineering Services	13,874 96
Advertising Sign on Roof of G. O. Building	1,941 04
Society of Gas Engineering of N. Y.	5,825 10
Society of Gas & Electric Accountants	1,107 08
Gas & Electric Choral Society	2,265 34
Gas & Electric Community Club	460 86
Gas Companies Employees Mutual Aid Society	42,751 31
Labor and Material furnished by Dept. of Mains and Services	135,879 91
Labor and Material furnished by Meter Department	12,549 66
Labor and Material furnished by Transportation (auto) Department	16,136 09
Gas Appliances Transferred	100,816 04
Total	$1,019,970 11

[fol. 1227] Consolidated Gas Company of New York

Charges Made to Affiliated Gas Companies for Reimbursement of Expenditures Regularly Incurred by Consolidated Gas Company for the Benefit of Affiliated Gas Companies, Exclusive of Certain Charges for Jointly Used Facilities During the Year 1923.

Engineering and Superintendence	$62,201 67
Maintenance of Department of Mains & Services	180,406 13
Maintenance of Promotion Deparment	125,923 94
Maintenance of Department of Claims & Arrears	48,204 37
Maintenance of Chemical Department	69,618 19
Maintenance of Pressure Gauges	4,386 30
Operating—63rd Street Gas Storage Station	55,078 48
Operating—Kingsbridge Gas Storage Station	23,777 91
Maintenance of General Office Restaurant	28,889 21
Maintenance of Meter Shop School	1,510 25
Pumping Drips	2,998 75
Operating General Telephone Switchboard	30,998 63
Services of Chief Engineer, Advertising *Eagle* Manager and Steam Engineer, and Special Meter Department Engineering Services	16,212 77
Advertising Sign on Roof of G. O. Building	87 04
Society of Gas Engineering of N. Y.	6,511 37
Society of Gas & Electric Accountants	1,501 43
Gas & Electric Choral Society	1,557 59
Gas & Electric Community Club	332 97
Gas Companies Employees Mutual Aid Society	46,855 59
Labor and Material furnished by Dept. of Mains and Services	107,626 01
Labor and Material furnished by Meter Department	15,619 46
Labor and Material furnished by Transportation (auto) Department	11,670 53
Gas Appliances Transferred	96,103 56
Total	$937,092 15

[fol. 1228] These tables are correct according to our books, and show the actual charges made to the affiliated companies for the reimbursement of the indicated expenditures, and the amounts that we actually received. In addition to the charges made by the Consolidated Gas Company for expenditures recurring regularly, charges are also made for reimbursing specific expenditures which occur occasionally and charges similarly made from time to time by the affiliated gas companies for services or supplies furnished to the Consolidated Gas Company. I am familiar with these charges. The basis of those charges are cost of labor and material plus a percentage for the items that cannot be specifically allocated. I am referring to the miscellaneous charges, for work, services, rendered and material furnished, whether it is from or to the Consolidated Gas Company. That is, where we can allocate, for example, the cost of materials and labor, that is the basis, and expenses that cannot be allocated we estimate on a percentage basis.

I have had opportunities since the last hearing to refresh my memory as to the total amounts charged by the Consolidated Gas Company during the years 1922 and 1923, for the percentage added upon labor and materials furnished and services rendered to its affiliated companies and charges of that nature. The percentage which we add on these bills and which we credit to undistributed adjustments, is a reimbursement of the cost to us of doing specific work or furnishing specific material and the percentage is added to cover the overhead cost of doing that work. We do not allocate those items to the specific accounts affected because to do it it would be almost a prohibitive clerical job. We cannot attempt, with all these hundreds of bills, to [fol. 1229] identify the specific items that are covered by this percentage that we add at the bottom of the bill, and as all the costs are reflected in our operating expenses, we credit this percentage to our Operating Expenses Undistributed Adjustments, and the same result is reached as though you tried to allocate each one of these items. To classify to each item of operating expenses under the Uniform System of Accounts the amount applicable thereto on every sundry debtor's charge during the year, it would be a tremendous job. No accountant would consider doing such a

thing. In my opinion it would add to our operating expenses without any substantial change in the result.

The responsibility for carrying out the company's policy of seeing to it that the amounts billed to our affiliated companies represent the actual cost to the Consolidated Gas Company rests on the secretary. Such charges, in my judgment, reimburse the Consolidated Company in the aggregate for all these costs incurred. I have made a tabulation of the amounts charged for such percentages during the years 1922 and 1923 which were credited to the Operating Accounts Undistributed Adjustments, representing the unallocated items, over and above the charges for the indirect costs prorated specifically through the apportionment of the charges. During the year 1922 there was credited $26,705.89 and during the year 1923 $25,636.12. Those items it would take a prohibitive amount of clerical labor to allocate to each of these specific items of operating expense.

[fol. 1230] When I testified this morning about the making of construction expenditures from current funds, I used the term "current funds" to mean the cash in bank in our general fund, from whatever source derived. We did not attempt to set up separate funds for specific purposes.

[fol. 1231] We have one cash account, one fund. We get money for construction by borrowing from banks currently, if it becomes necessary, and issue stock from time to time under the approval of the Commission. Whatever moneys we have we call general funds. We do not in any way earmark our moneys as between one purpose and another.

When I was asked a question by counsel at page 2631 of the typewritten minutes with respect to our responsibility in connection with the financing of the Consolidated Gas Company, and I stated that I did not have anything to do with the financing, my mind naturally jumped, of course, in response to his question, to the negotiation with the bankers for funds. I testified it had not been specifically assigned since Mr. Carter's death, but it may be understood that for the present at least the President is responsible for those matters.

The financial requirements of the company I have been very closely in touch with. For many years our Vice-President, Mr. Carter was responsible for the company's financing and I conferred with him and made tabulations for him

and with him, studied our estimated income and when it was coming in, when our disbursements would be needed in the requirements of the company, and all that sort of thing, for many years.

I have prepared in connection with the matters concerning which I was interrogated on cross examination, a statement showing the amount of our expenditures for gas rate litigation and for proceedings before the Public Service Commission, once called "P. S. C. Proceedings," now called "Regulatory Commission Expense." This is taken right from the books. It shows that amount in dollars per thousand cubic feet of gas sold for each of the years indicated. This is true and correct according to our books [fol. 1232] and the computations are correctly made.

With respect to the rates charged to the various projects for the use of automobile service in connection with those projects, we charge the cost of operating our automobiles to a suspense account and we credit the automobile suspense account and charge the appropriate capital and operating accounts at rates per each class, as I testified. Whatever variation is left in the automobile suspense account at the end of the year is taken out of that account and spread over the appropriate operating and construction accounts. If any change arises during the year as to the rate at which these services to the construction or operating departments are charged to those accounts, we would adjust our schedule, but whether we did it or not, the roundup at the end of the year takes care of it automatically, by spreading the variation between the actual and estimated cost over the appropriate accounts.

Mr. Nickerson, under my supervision, makes a check of the cost to the other companies of the gas which the Consolidated Gas Company purchases from them. He provides a bill rendered to the Consolidated Gas Company from the records of the other companies. The bills from other companies for gas sold by any of those companies, including the Astoria, go to Mr. Nickerson under my supervision in the regular course of business. He obtains from the companies rendering such bills any information in connection therewith. He gets that information by examining the cost records of the company that produced the gas.

[fol. 1233] At various times on cross examination, I testi-

fied with respect to the basis on which the Consolidated Gas Company would be billed for gas purchased by it from any other company and the provision of the price of such gas by my department. My testimony in that respect related primarily to the work done by the statistical department under Mr. Nickerson, and the same thing is true with respect to what I stated as to the provision of the investment in properties of other companies used in the service of the Consolidated Gas Company's consumers.

Concerning the so called Joint Facilities Reports prepared and submitted to the various companies by George E. Woods, Chief Engineer, that report was submitted to and adopted by the Board of Trustees of the Consolidated Gas Company. It is submitted and approved by the Executive Committee of the company and their action is confirmed and adopted by the Board of Trustees at their next meeting.

At typewritten pages of the minutes, pages 3881 and 3882, Counsel directed my attention to Block 1783 between First and Second Avenue and 111th and 112th Street, where it has been testified that there is a yard used by the Department of Mains and Services as a school of instruction, and I stated in substance that there was no yard on that parcel so described which was used by the school of instruction. In answer to the question, the phrase "school of instruction" and I very properly—my mind jumped at once to the school of instruction maintained by the Meter Department in the Repair Shop Building. That is on the second floor at 111th and First Avenue. The school of instruction of the Meter Department does not use any yard space. The school of instruction of the Department of Mains and Services is in Block 1683. The school of instruction of the Street Department do use a part of that yard. In Block [fol. 1234] 1683, it is outside work they do, in laying out and instructing their people. The School of Instruction of the Meter Department is inside the building. They lay mains out in this yard, but the school of instruction of the Meter Department is on the second floor of the Meter Repair Shop Building, and so far as Block 1683, there is a yard used by the Department of Mains and Services as a school of instruction.

At typewritten minutes on Page 3876, counsel directed my attention to the yard between 17th and 18th Streets,

at Avenues A and B, used for the storage of cast iron pipe and fittings.

[fol. 1235] In regard to the prices of the American Meter Company for the repair of meters, and the prices paid by our company to the Standard Gas Light Company for similar repairs, I have prepared a tabulation showing the difference between the cost of meter repairs at the prices actually paid by our company to the Standard Gas Light Company, and the cost of the same repairs at the rates announced and circulated by the American Meter Company. Those prices of the American Meter Company are those which came to my attention in the course of business to which I have already testified. The figures as to the actual cost of our meters as repaired by the Standard Gas Light Company are according to our books. I can state the difference in cost shown by the computations concerning which I have already testified. This tabulation is true and correct and prepared in the manner to which I testified.

(This schedule was offered in evidence in behalf of the plaintiff, and was marked Plaintiff's Exhibit No. 804 for Identification.)

I have produced here photostatic copies of the price lists of the American Meter Company for the repairs of meters in effect during 1922 and 1923. These are photostatic copies of price lists which were received by me from them in the regular course of business, and are the price lists as of November 16, 1921, with two notices of clearage in 1923, which we used in preparing Plaintiff's Exhibit No. 804 for identification. The originals of these are in my possession.

(The schedules offered in evidence in behalf of the plaintiff and were marked Plaintiff's Exhibits Nos. 805, 806, 807 [fol. 1236] for Identification.)

[fol. 1236] I have prepared a statement of the actual unit costs of meter repairs of the different classes and sizes of meters in the three different classes of repairs, showing first the unit prices actually paid to the Standard Gas Light Company and to the repair prices quoted to us by the American Meter Company for the years 1922 and 1923.

These unit costs for the Standard Gas Light Company are the costs as adjusted to the actual cost during the year.

(Statement offered in evidence in behalf of the plaintiff, and marked Plaintiff's Exhibit No. 808 for Identification.)

Mr. Livingston prepares and handles the work of preparing and inserting advertising in the newspapers in behalf of our company. That is true both for the Consolidated Gas Company and the New York Edison Company. We insert from time to time in the newspapers advertisements with respect to gas appliances in the use of gas. I looked up the apportionment of Mr. Livingston's salary between the Consolidated Gas Company and the New York Edison Company and I found that one-half his salary is charged to the New York Edison.

The work which I do as Auditor of the accounts of the Fire Insurance Trustees and the Liability Insurance Trustees, I do nights, Saturday afternoons and Sundays. It is not done as a part of my work for the Consolidated Gas Company or outsiders; the trustees pay me for that individually. The same thing is true as to Mr. Norton. He is on my own staff and he looks after those items with me on our own time and they pay us a small com- [fol. 1237] pensation for doing it, and Mr. Norton and I do practically all this work.

I produced the fire insurance agreement dated September 15, 1902, with revisions to March 15, 1924, including any changes in personnel of the trustees: that is true and correct from our files. It is offered in evidence.

I also produced the liability insurance agreement effective January 1, 1913, with revisions to March 15, 1924, including changes in the personnel of the trustees.

I testified that as to a change from 1922 to 1923 of the method of charging to the affiliated companies their share of the expense of the Promotion Department the variation would be very small. Regarding the amount of those expenses bilied to other companies in 1922, we charged affiliated companies $116,357.57. These charges amounted in 1923 on the basis of the change in method, to $125,-

923.94. Those amounts are already in these tabulations I have testified to.

This is the original annual report to the Commission for the year 1922 signed by Mr. Cortelyou (showing report to witness) and that is Mr. Cortelyou's signature. Annual Report for the year ended December 31, 1922 was considered as marked Plaintiff's Exhibit No. 811. This is the annual report for the year ended December 31, 1923, was similarly signed by Mr. Cortelyou, handing report to witness.

Recross-examination by Mr. Donnelly:

These statements, which purport to show the charges made to the affiliated gas companies, do not include charges made of the same or similar character to other companies, to the electric companies and the Consolidated Telegraph & Electrical Subway Company. They are regularly recurring charges, coming along every month periodically, [fol. 1238] These statements purport to give only the charges made to the affiliated gas companies. I cannot tell what is the amount of the actual total monthly charges through the Sundry Debtors Blotter in 1922 and 1923, including other bills not show in that statement. That total is shown in the Sundry Debtors Blotter.

Referring to the two statements with reference to the number of automobiles owned, one as of December 31, 1922 and the other as of December 31, 1923, I know of my own knowledge the use to which the automobiles stated upon those two statements are devoted. The use is not given on these statements. I have a statement of the uses to which the various cars on these statements are assigned which statements which I got from the Transportation Department. The passenger automobiles are officers and heads of departments; five; Street Departments, seven. That is used by the Street Department, superintendents of the different departments, the assistant superintendents; Industrial Division, 2; Construction Department, 2; Engineering Department, 1; Utilization Department, 1; Paymaster's, 2; Fitting Shops, 5; and what we know as the Taxi Service, 4. The cars under Taxi Service are four cars retained for use of anyone in the company to whom

a car is not specifically assigned, but who needs one periodically.

There is a department called the Utilization Department. That department has to do with the selling and rental of gas appliances.

I have a statement of the use to which are assigned the gasoline trucks under two tons right up to this minute, within 48 hours. Of course, those figures change a little [fol. 1239] bit. Five of these here on the statement as of December 31, 1923, are the small gasoline trucks, under two tons. One for the Fitting Shops, one for the Construction Department, eight for the Emergency Service. There are two cars of two tons and over of them used by the Street Department, for whatever work that the Street Department may be doing. I did not say that some of the trucks under two tons capacity were used by the Street Department, except in so far as those emergency wagons may be said to be Street Department cars. The emergency wagons are used for emergency calls in connection with the Street Department work. They are used for repair to a gas main, or something of that kind, a leak or asphyxiation, or any of the things that happen; fire, explosions, anything like that that happens anywhere. There are 49 electric trucks under two tons for 1922, all assigned to the Meter Shops. The same thing holds true for 1923. All those 53 electric trucks, small ones are all assigned to the Meter Shops, for conveying meters and all small items from the shops to the consumers premises and the gas appliances requisitioned. There are eleven large electric trucks assigned to the Street Department for whatever work the Street Department may be doing. I have described the use to which the emergency cars are assigned. The Utilization Department does not sell or rent appliances. They have to do with the testing of all appliances that are brought on the market, as to their efficiency and specifications and recommendations as to what should be done, and how it should be done to promote the sales of gas. I could not say whether Mr. Moness uses the car. He is in the Commercial Department.

[fol. 1240] I already covered Estimated Automobile Expense pretty thoroughly, but I will go over it again. We set up a rate per hour which, according to our best judg-

ment, will exactly cover the cost of operating each class of automobiles, and the actual charges, as they are incurred, are charged to a suspense account. Based upon the service rendered, we credit that account at the rates we have established and charge it to the proper operating and construction accounts. There will be, of course, at the end of the year a variation between our estimated rate per hour and the actual, and whatever that variation may be, we make an entry closing our books at the end of each year and spread that variation over the appropriate operating and capital accounts.

I testified that the trustees carry unlimited risks, under the liability agreement. By "unlimited risks" I mean place no limit upon the amount of liability that they incur when they are taking on our insurance, and the outside companies in which one insures carry what is known as a limited risk, limited to the number of dollars, what we call an "Ten twenty" policy; $10,000 for any one individual; $20,000 as the maximum for any one accident. Those two amounts, that minimum and that maximum, represent the limits within which they will insure.

We can tell you definitely the number of consumers on the district, if you assume each consumer to be a meter. We can tell you definitely the number of meters that were [fol. 1241] on the district as of August 31, 1922. At the time the Mutual was taken over by the Consolidated, I had that data; the number of consumers that the Mutual had.

April 22, 1924.

Met pursuant to adjournment.

[fol. 1242] Arthur W. Teele, being called as a witness on behalf of the plaintiff, being duly sworn, testified as follows:

Direct examination by Mr. Ransom:

I am a certified public accountant of the State of New York and of the State of Ohio and member of the New York State Society of Certified Public Accountants and a member of the American Institute of Accountants and the senior member of the firm of Patterson, Teele & Dennis, Accountants and Auditors, whose offices are in the Borough of

Manhattan, New York City, and in the City of Boston, Mass., Baltimore, Maryland, Washington, D. C.

I have practiced as a public accountant in New York since 1891 and in the course of my experience I have examined the accounts of all kinds of corporations, railroads, public utilities, (including gas companies, electric companies and traction companies) municipal and public bodies, institutions, individuals and estates.

After graduating from a business college, I entered the employ of William Trenholm, a public accountant, and worked with him from 1891 to 1894, having, prior to the latter date, become a partner in the business. From 1894 to 1900 I was a member of the firm of Teele & Dennis, engaged in accountancy and auditing, and in 1900 I formed a firm of accountants under the name of Patterson, Teele & Dennis, which has been in existence for over twenty years.

Among the special works in accountancy and auditing in which I have engaged, I may mention the following: in 1904, under employment by the District Attorney of New York County, I made an examination of the Metropolitan Street [fol. 1243] Railway Company's accounts and affairs. In 1905, I was employed by the Stevens Legislative Committee, which was engaged in investigating the gas companies in the City of New York, and of which the Honorable Charles E. Hughes was counsel, to make an examination of the accounts of the Consolidated Gas Company, and I prepared statements for that Committee covering the gas company's accounts for a period of five years, and these statements, with the information elicited from the gas companies, upon the facts reported by me, were used by the Committee in making its report and recommendation to the Legislature which passed the Eighty-Cent gas law. I was also engaged by a Legislative Committee of New Jersey, and made an investigation of the accounts and finances of Jersey City. In 1893 I made an examination of the accounts, finances and affairs of the Brookline Gas Company of Boston. At other times, I made examinations and reports as to the accounts of the Elmira Gas & Water Company, the Rochester Gas Company, the Duluth Gas & Water Company, the New Orleans Railway & Light Company (including the gas operations in New Orleans), the Spanish American Light

& Power Company in the City of Havana, Baltimore Electric & Traction Company, and also of a number of other public utilities throughout the country. I have made examinations and reports as to the accounts of the Chicago, Rock Island & Pacific Railroad Company, at the instance of [fol. 1244] bankers and bondholders' commi-tee—one of the examinations being made in connection with a bond issue of $50,000,000. My firm has been the auditor of the Southern Railway Company since its organization in 1894 and I personally conducted the audit of its accounts annually since 1901, and in later years also the accounts of the affiliated line. My firm has also been the auditors for the American Telephone & Telegraph Company, the Adams Express Company, the General Electric Company, and many other corporations. In 1911, my firm was engaged on behalf of the Catholic authorities and I and one of my partners made an investigation of the accounts and financial affairs of the Catholic charitable organizations in the city of New York. In 1917, and subsequently, I was a member of the War committee of the American Institute of Accountants, which acted as a subcommittee of the General Munitions Board at Washington, and as a member of such committee I assisted in the preparation of a plan and the establishment of an organization for the Government in connection with the construction of all cantonments and army camps, in order to account for expenditures in connection therewith, and I also performed other accounting work for the Board. In 1918, at the request of General Williams, Chief of Ordnance, of the United States Army, I was engaged in reorganizing the system of pursuing and recording the progress of work and of contracts let by the Ordnance Department. In 1921 I was appointed by President Hard-[fol. 1245] ing as the accounting member of the Claims Commission of the Emergency Fleet Corporation and sat on that Commission from August 1921 to December 1922.

During 1919 and 1920 I was employed by the Consolidated Gas Company and its affiliated gas companies, including the plaintiff in the action on trial, to make examinations of their books of account, records and vouchers, and to prepare therefrom statements or schedules to be presented to the Court in the rate litigation of those companies then pend-

ing, showing the revenues, expenses, including cost of production and distribution of gas of those companies, for various periods of time. In the case of the Consolidated Gas Company I was also engaged to make an examination in that company's capital expenditures for the period between 1906 and 1919. I carried on that work and testified before the Federal Court in those cases and introduced various schedules of revenues and expenses and the cost of production and distribution of gas of those companies, and also schedules of the capital expenditures of the Consolidated Gas Company, as well as other schedules supplementary thereto. I was also engaged to examine the books and records of the New York and Queens Gas Company and the Bronx Gas & Electric Company for subsequent periods in connection with rate proceedings before the Public Service Commission, and prepared and testified to schedules of the gas business of those companies. Similar work involving the gas business of the Queens Borough Gas [fol. 1246] and Electric Company was performed by my firm in connection with gas rate proceedings before the Public Service Commission. I have also conducted a similar examination into the books of accounts and records of the gas companies operating in Westchester County and have prepared schedules of the results of my examination. I was also engaged to examine the books and records of the New York and Queens Gas Company for the twenty months ended August 31st, 1923, and the Bronx Gas and Electric Company for the two years ended December 31st, 1923, and testified before the Master in both those cases and introduced schedules of cost of production and distribution of gas of those companies.

In June of 1923, I was employed by the Consolidated Gas Company to make an examination and audit of its accounts and accounting records in connection with the pending case, from January 1, 1922 to December 31, 1923, so that I might prepare from the books and underlying records a statement of the cost of distribution of gas for such periods as might be required. I worked with the assistance of one of my partners, Mr. Moeran, and with a selected staff of assistants, all of whom were members of the staff of my firm, and not employees of any gas company. In addition to my partner, Mr. Moeran, the members of the staff or some

of them at least, were: Mr. Moysey, Mr. Dennis, Mr. Brown, Mr. Austin, Mr. Landry, Mr. Shields, Mr. Rydholm, Mr. [fol. 1247] Cox, Mr. Mahoney, Mr. Prochaska, and I think there were up to twenty-five on the staff at one time. Mr. Nutter was among those, and also Mr. Henderson. I can give you a complete list if it is necessary. Mr. Andol Scheck did also. All these persons are junior or senior accountants of experience.

I made the original plans for the examination and I gave the instructions for the work to be done, and as the work progressed I conferred from time to time both with Mr. Moeran and with the members of the staff, giving further directions and reviewing what had been done; and when the work got to a point where the necessary materials had been gathered and the compilations made, I personally checked those compilations against the books and reports of the company. This work was done by me at the office of the company at 130 East 15th Street, New York City.

I received instructions in the latter part of June, 1923, and I started the work almost immediately with four men, and the work has progressed continuously and has just been completed. We used the Operating Ledger A for 1922 and Operating Ledger B for 1922; Operating Ledger A for 1923 and Operating Ledger B for 1923; the Operating Journal for 1922 and the Operating Journal for 1923; the payroll summaries for 1922 and the payroll summaries for 1923; the Invoices approved for 1922 and the vouchers; the Invoices approved for 1923; and the Petty Cash. In addition to these, we have referred to numerous subsidiary [fol. 1248] books and records, vouchers, pay rolls and departmental reports. We made a test of the Consumers Ledger in two of the branches and also the consumers accounts kept in the general office of the Commercial Department. All of those books which I have enumerated are included in those which were put in evidence during Mr. Brundage's testimony. Those which we did not examine were books which were not necessary for us to examine in order to obtain the information necessary to prepare the statements which I have prepared. There were put in evidence balance books and indexes and ledgers which it

was not necessary for us to refer to, they being subsidiary books.

In the course of that examination of the books, accounts and records of the plaintiff, I found various printed forms and devices used by the plaintiff for recording the various transactions of its business and examined those forms. In my judgment those forms are adapted to recording accurately in the regular course the transactions of the plaintiff company's gas business, and are well designed for that purpose. The books and records and accounting system of the plaintiff company are so designed that if entries are correctly made therein and they are properly kept, they will correctly reflect the gas business of the plaintiff company.

As the result of my examination of the books, records and vouchers of the plaintiff, I have prepared statements [fol. 1249] of the cost of production and distribution of gas by the Consolidated Gas Company for the year ending December 31, 1922, and for the year ending December 31, 1923.

(Statement for year 1922 marked Plaintiff's Exhibit No. 813 for Identification.)

The preparation and verification of Plaintiff's Exhibit No. 813 for Identification, included the checking of the entries in the Operating Ledgers for 1922 and 1923, with the Operating Journals, Payroll Summaries, Record of Invoices Approved, Petty Cash Vouchers and Superannuation Payrolls, or other source as indicated in the entries.

I made tests of the correctness of the payrolls for the payment of labor, by checking the individual time cards with the payrolls; verifying the calculations of the amount of pay due the individual employees; and verifying the footings or totals of the amount of pay shown on the payrolls for each department for one month in 1922 and 1923, respectively. In addition to the above tests and in connection with the same payrolls, we separately listed the amounts to be charged to the respective accounts as shown by the time cards, and compared the results with the distribution shown by the Pay Roll Summaries.

[fol. 1250] Invoices for gas making materials received

by the company were examined by us, together with all other account payable vouchers for the entire period—January, 1922, to December, 1923, inclusive.

The Superintendent of each manufacturing station furnishes the Accounting Department each month with a signed statement showing, in addition to certain statistical data, the quantities of gas making materials received and used or sold during the month, together with the residuals produced and used or sold during the month. The quantities of such materials on hand at the beginning and end of the month are also shown. These reports to the Accounting Department are the basis for entries in the journal recording the use of gas making materials, the prices for which are determined by the invoice cost and handling charges.

The quantities of gas making materials shown on this statement have been compiled from the monthly reports of manufacture signed by the respective superintendents. These reports have been checked against the Accounts Department's work sheets called "Gas Production Statistics" and these in turn to the monthly journal entries recording the gas making materials used for the whole period—January, 1922, to December, 1925, inclusive. The computations [fol. 1251] made on the work sheets also have been verified.

The quantities of pipe and specials in the installation of new mains and new services, and in the repairs of mains and services during 1922 and 1923, reported by the Department of Mains and Services, were verified as to prices, extensions and footings and the totals were checked to the journal entries.

The reports of materials used in the setting of meters, setting of appliances and jobbing installation work, reported by the Superintendents of the respective shops, were all checked against the journal entries recording the amount of this material used for the entire period, January, 1922, to December, 1923, inclusive.

The monthly reports of gas appliances showing the sources from which gas appliances have been received and recording deliveries and their destination, received from each Branch, were verified as to prices, extensions and footings and all transactions recorded therein verified with the

respective sources and the total checked to the monthly entries for each month of 1922 and 1923.

[fol. 1252] The monthly statement of the Commercial Department and the Branches reporting the gas sold to consumers have been checked against the journal entries recording the total charges to consumers for gas for the entire period from January, 1922, to December, 1923. A test of the accuracy of these statements was made by checking the complete transactions as to accounts of 500 consumers in Branch No. 2, and the accounts of 300 consumers in Branch No. 1.

The charges against the Consolidated Gas Company for the use of plant and facilities owned by other companies and the charges made by the Consolidated Gas Company against other companies for the use of its plant and facilities are based upon the reports of Mr. George E. Woods, Chief Engineer of the Company and all the bills and vouchers in connection therewith have been compared with those reports and the amounts verified.

The rates charged for gas purchased by the Consolidated Gas Company have been checked against the Book Form Reports of the respective vendor companies and the computations have been verified.

The foregoing covers in a general way the work done in verifying the correctness of the bookkeeping records but does not contain all the steps taken or the detail necessary to describe fully what has been done.

For the various checks and verifications that were made in selected months at particular stations or departments, those months were selected in some cases by myself, and in others by Mr. Moeran. They were selected at random with a view to making tests over a wide period, and representative checks in the different departments. I, or my staff [fol. 1253] under my direction examined all bills and vouchers for the year 1922 and 1923, covering vouchers, payrolls and bills recorded in the books of account.

I am more or less familiar with the pamphlet issued by the Public Service Commission known as the Uniform System of Accounts for Gas Corporation. I made no special check or comparison to find whether the accounts of the Consolidated Gas Company follow the uniform system of accounts; but from my knowledge of the Uniform System

of Accounts and from my knowledge of the accounts of the Consolidated Company gained after examination of their books and records, I should say that they do follow very closely the Uniform System of Accounts.

Referring to Plaintiff's Exhibit 813 for Identification, which is the Statement of Cost of Production and Distribution for the year ended December 31, 1922 upon which are set forth on this exhibit various items of generator fuel, boiler fuel, gas oil, gas-making labor and the like, all of the figures appearing in the Quantity column are compilations of figures appearing in the monthly reports of the Superintendents of the manufacturing stations. Those reports show the quantities and materials used, and are signed by the works superintendents. These quantities were compiled in the figures in which they appear in the Quantity column by different members of my staff under my direction. With respect to the other items which I have mentioned, for example, boiler fuel, gas oil and iron mass. I obtained the figures from the same source as I did generator fuel.

Referring to the column which is headed "Amount" on [fol. 1254] this exhibit, each of the items in the cost of production are figures that appear upon the ledger or they are compilations of figures appearing upon the ledger, with a few exceptions. These exceptions include the following: The item of Sundry Supplies is made up of sundry supplies at the 11th Street station, sundry supplies at the 21st Street station, and sundry supplies at the 99th Street station, the three aggregating $6,534.63, and I have also included in that item of sundry supplies an item which is reported by the works superintendent under the head of Generator Fuel, a small quantity of water gas tar that was used at the 11th Street station, the total amount being only $129.06, and it being so very small, I have shown it under Sundry Supplies rather than set it out as a separate item under Generator Fuel. That small quantity of water gas tar was shown on the works report as generator fuel. I was informed that it was tar that had been used in some experimental operating in generators and for that reason I have classified it here as sundry supplies rather than as generator fuel.

With respect to this item of sundry supplies on this ex-

hibit, which totals $6,663.69, that includes a sum of $129.06 which does not appear under that heading on the ledgers themselves. I have excluded it from generator fuel, but I have added it here as sundry supplies. That relates only to one plant and one month.

The item of Gas Making Labor which is shown here, in [fol. 1255] cludes an amount of $62,915.44, which is the total of the labor column in the Miscellaneous Works Expense account, and is a figure which appears upon the ledger.

The item of repairs, $364,817.05, excludes repairs to Inwood Station shown on the books, $21.68, and repairs to 14th and 42nd Street stations, except repairs to holders which are shown separately in the amount of $19,258.52 on sheet 2. I have taken the book figures and have made an elimination, for example, at the Inwood property of $21.68, that not being a property used at the present time.

Miscellaneous works expense, $84,249.68, is made up as follows: The material columns in the ledger account Miscellaneous Works Expense, $86,017.65, from which I have deducted an item of $1,767.97, which, according to the record, were expenses incurred in removing piping from the Toluol Plant at 21st Street Station and should not have been charged in that account or should not have been classified as Miscellaneous Works Expense. I eliminated such items found not attributable to production and distribution of gas.

The item of gas purchased $7,013,135.52 and Use of Manufacturing Plant Capacity of $2,906,171.31, is made up as follows: Gas Transferred $9,868,938.53, as shown by the books to which I have added gas purchased from the New York Mutual Gas Light Company as of August 31, 1922, which is charged to Profit and Loss on the books of the Consolidated Company $32,368.33. It was charged to Profit [fol. 1256] and Loss, and I have included it as part of the gas purchased by the company, as it was purchased by them at the time they took over the Mutual Gas Light Company. And there was that amount of gas for which the Consolidated Company paid the Mutual Company at that time, and I have included that in gas purchased by the Consolidated Company for its 1922 operations. That is, up to that date of August 31st there had been purchases of gas by the

Consolidated from the New York Mutual Company in the sum shown on this schedule sheet.

From the item of Gas Storage, which includes also the item of Station Distribution, amounting to $244,688.35, I have excluded the item of Gas Storage at Inwood, $124.45, as not attributable to gas operations.

The item of Miscellaneous General Expense $183,418.23 excludes gas rate appeal No. 2, $30,855.54, and expenses in re Public Service Commission hearings $43,491.65, which are shown separately. Both items are columns in the Miscellaneous General Expense Account as it appears on the ledger. I have split the account into three parts, by taking those items out of the bulk or lump figure and showing them separately.

The item of Repairs, Insurance, etc., re property rented to others, $1,236.35 is made up as follows: Miscellaneous Operating Revenue Deductions account is $301,601.44. The Taxes Accrued column included in that account amounts to $89,655.98. I have deducted the amount of the Taxes Accrued column. The balance is made up of Repairs to Build- [fol. 1257] ings, Operating G. O. Building, and Sundries columns, $211,945.46, and I have excluded from that non-gas item included therein amounting to $210,709.11, leaving only the balance of $1,236.35 shown on the statment.

As to the item of Taxes $1,865,624.40, I have shown a reconciliation of that in the statement of taxes, which is a separate statement from this cost of production and distribution. I have my detail on taxes on a paper to be furnished to the defendants, and the detail for reconciliation on the tax item is shown in that statement.

The Interest on Unpaid Taxes, $129,141, is $2,305.04 less than the amount shown by the books, due to the fact that we have excluded interest on real estate taxes not applicable to the gas business aggregating $1,865.44 and interest on the 1920 and 1921 personal taxes of the New York Mutual Gas Light Company also included in the book total in the amount of $439.60.

The rent of Gas Appliances, $1,465,979.77, which is a deduction under the head of Miscellaneous Operating Revenue, credited against the cost of operation, is $47,841.12 less than the amount shown by the books, due to our having corrected the clearance of the Suspense account closed to this account

at the close of the year, the clearance not having been made correctly on the books of the company. I will explain that a little further by saying that the rent of appliances as [fol. 1258] charged to consumers and reported monthly is credited to a suspense account or a clearance account, and the company takes up in its monthly reports a proportion of that account based upon the cubic feet of gas sold. At the end of the year, whatever portion is unabsorbed they take up in the month of December, continuing throughout the year until the month of December. Until the end of December they had created a debit balance in that Suspense account. The bookkeeper, in making up the necessary entries for the closing of the books was mistaken in the balance. It was a debit balance and he took it as a credit balance; consequently he made an entry to the debit of that account and to the credit of the revenues for the year and it brought about an excessive credit in the revenues, and I have stated in my cost of production and distribution the correct amount. The same thing occurs in 1923, only reversed. The company corrected the error which had been made in 1922 in 1923 and I have included in 1923 the same amount more than what the account shows for that period. That is, between the two years the item of Miscellaneous Operating Revenues from the Rental of Gas Appliances was over-stated on the books of the company in 1922 and understated by the same amount in 1923. I have stated the correct amount in each year.

Other items to which I wish to direct attention as to differences from the amounts at which they appear on the [fol. 1259] ledgers are the Interest on Bank Balances $47,180.29 which is made up of Interest on Bank Balances per books $46,965.19, and Interest on Consumers' Final Bills $215.10 included in the Miscellaneous Interest Revenue account on the books, the amount of which we determined by anaylsis.

The item of Rental of Jointly Used Facilities $107,317.49, is made up as follows:

The total, according to the books, is $298,307.33. Included in that is an amount of $10,809.30, which is the amount billed by the Consolidated Gas Company to the Standard Gas Light Company for the use of Mutual facilities for the first eight months of 1922. Inasmuch as that

was a period prior to the taking over of the Mutual facilities by the Consolidated Company, the amount charged in addition to what had previously been charged is not entitled to appear in the revenues of the Consolidated Gas Company, because they did not own the property at the time that the charge accrued. I have also deducted from the amount shown on the books 8 per cent return on the investment included in rental, of $180,180.54, making a total deduction of $190,989.84, leaving a balance of $107,317.49.

The Miscellaneous Rent Revenue $44,549.76 is made up of Miscellaneous Rent Revenue as shown by the books $486,- [fol. 1260] 258.97, less the non-gas items included therein, of $442,430.86, leaving a balance of $43,828.11, to which I have added the item of wharfage, $721.65, making a total of $44,549.76. I have included the wharfage in this item of miscellaneous rent revenue, as a deduction from production in distribution costs.

I have not made a comparison between the cost of production as shown by the company's book form report, which is taken directly from their books and my own computations. Some portion of it has been compared, but I have not compared it and I can not say what the difference is. I know that these eliminations to which I have referred have been made in order to eliminate from particular accounts, as shown on the books, expenses or revenues not attributable to gas operations. I cannot say whether the net effect of the changes I have made is to increase or reduce the expense of production and distribution of gas as shown by the books. I have not made a comparison directly and I do not happen to know just what it is. I do not know from the figures I have made what the net effect is. I have not made that comparison. It is just by accident that I have not done it. I do not know what the cost is as shown by the book form report. Where there are evidences of what I regard as accounting errors or variations, I have taken those into account in making these statements, and [fol. 1261] where it has seemed to me advisable to split up and show, under separate subdivision, items which on the ledgers are shown in one lump sum, I have gone to the underlying records and made such sub-division, and where the items have not been separately set forth on the ledgers, where I deemed advisable I have analyzed the accounts and separated the elements.

By the Master:

The quantities used in the production and distribution are not set forth in the blotter or the ledgers, only the results in money.

By Mr. Ransom:

The quantities are set forth on the superintendents' reports, and are set forth on the work sheets in the accounting department, and they appear in the book form reports of the company, and those are the only three places where they appear in the Accounting Department. I set out the item of interest on bank balances, which I treated as a deduction from the cost of production and distribution, in which I included interest on final bills. I have also shown, as an item of expense, interest on consumers, deposits as shown by the books.

The figures appearing in the column "Unit Price" of Plaintiff's Exhibit No. 813 for Identification are the resuls of computations made by dividing the figures appearing in the "Amount" column by the figures appearing in the "Quantity" column, opposite each item, and those are computations which were made by me or by my staff under my direction and checked by me in the way as to which I have testified. The column headed, "Cost per M cubic feet made" is the result of dividing the figures appearing in the Amount column by the number of thousand of cubic [fol. 1262] feet made. The figures shown in the column headed, "Material per M cubic feet made" are also the results of computations made by dividing the figures appearing in the Quantity column by the M. C. F. made, and those were computations which were made or checked by me in the way in which I have described.

On the second sheet of exhibit No. 813 for identification, the figures appearing in the column "Cubic Feet" are the aggregate of figures appearing on the bills of the respective companies, as shown. The figures appearing in the Amount column for gas purchased and also for the use of manufacturing plant capacity, taken together appear on the operating ledger, in the "Purchased Gas". The total, $7,013,135.52 plus $2,906,171.34 appears in the ledger as the total of one account. I have analyzed the items in that account and have segregated the items to each company and have

set them down here as totals from the monthly bills, and to that I added this small item of gas taken over as in the Mutual mains and holders on August 31, 1922, of 63,145,400 cubic feet, the cost of which to the Consolidated Gas Company was $32,368.33.

These items which appear in the Amount column for the use of manufacturing plant capacity are the aggregate of the monthly bills and they are bills rendered under the terms of the Woods' report of December 19, 1922. The figures in the amount column against the item of Gas Storage (Manufacturing and Storage Station), of $244,688.38 is the aggregate of seven different accounts, I think, which includes station distribution as well as gas storage. And [fol. 1263] each of those seven separate ledger accounts appear in the ledger and I have brought them together in this one item. The figures in the last column, opposite the item "Repairs, 14th Street and 42nd Street Reserve plant (Coal Gas), amount to $19,258.52" is the aggregate of items appearing in the various repair accounts, where they are separately designated as repairs under the 14th Street and 42nd Street. They appear in at least seven separate repair accounts in the ledger and I brought them together here.

At the bottom of Sheet 2 of Exhibit 813 for identification, in the computation showing the number of cubic feet of gas unaccounted for by the plaintiff company in 1922, the figure for stock on hand is the difference between the gas reported on hand January 1, 1922 and the amount reported on hand January 1, 1923, both of which quantities are compiled from reports made by the Superintendents of the manufacturing stations and the Superintendent at the Kingsbridge holder station. The quantity of gas used by the company is taken from a statement compiled by the Assistant Secretary, Mr. Nickerson, from reports by the branches monthly, showing the reading of meters in use by the company. Those monthly branch reports we have checked against the statement prepared by Mr. Nickerson. And those show the readings of meters upon premises where [fol. 1264] the company uses gas. The cubic feet of gas reported as sales to consumers is taken from the bookkeepers recapitulation of sales, and the report of General Office sales, the large consumers and municipal sales being carried in the General Office. Each Branch sends in

monthly the reading of the meters in their district for the consumers whose accounts are kept at the General Office, and the reading of those meters is taken from the report sent in by the Branch Offices, and they are recorded on the consumers ledger accounts as kept at 15th Street.

The Commercial Department superintendent sends monthly to the Accounting Department a summary of the bookkeepers recapitulation of sales, as well as a memorandum of the sales made in his own department.

The gas used by the company and the gas sales to consumers, taken together, make the accounted for gas. The difference between the accounted for gas and the total number of cubic feet to be accounted for produces the unaccounted for gas of 1,416,346,600 cubic feet. This difference or loss is attributed by the company as due to condensation, leakage, etc., and that number of cubic feet is 6.42 per cent. of the total number of cubic feet to be accounted for.

Referring to the third sheet of Exhibit No. 813 for Identification, in converting the cost of gas made and purchased on Sheet 2 into the cost of gas sold, I have taken the total [fol. 1265] figure forward of $14,321,282.75 and have divided it by the number of cubic feet of gas sold, producing a figure shown in the column "Cost per M. C. F. sold." All the way through the third sheet the figures in the column headed "cost per M cubic feet sold" are the result of dividing the amount in dollars by the number of cubic feet sold. The same as on the preceding pages where I showed per M cubic feet made.

As to the items under the heading of "Cost of Distribution and Other Expense," the amounts shown in the column headed "amount" either appear upon the ledger or they are compilations of figures appearing upon the ledger, with the exception of those items to which I have already testified, as to which I made certain eliminations of expenses attributable to non gas operation, and also with the exception of Repairs, Insurance on Property rented to others, and so forth. I have stated the exceptions to this whole statement.

The eliminations I have made of the property which I have regarded as not being used and useful in the gas business, conform with the description and classification of the property made by Mr. Alrich. I made that comparison

from the maps which he handed to me and which have been put in evidence, as Exhibit No. 258. The property not shown on those sheets as property used in the plaintiff's gas business, I treated as not useful in the gas busi- [fol. 1266] ness at this time. With respect to the properties acquired during the period 1922 and 1923, I treated those in the same way in which they were treated in Mr. Alrich's exhibit.

The figures as to cost of distribution and other expenses, in the column headed "Cost per M cubic feet sold" are the result of a computation made by me and my staff, dividing the amount in dollars by the quantity sold.

There are numerous bills made by the Consolidated Gas Company against the affiliated gas companies for the purpose of reimbursing itself for expenditures made by the Consolidated Gas Company, and I found such charges and treated them in the manner which I have already indicated in my testimony or have shown in this Exhibit. The figure for the item of Retirement Expense as shown on the first sheet of Exhibit 813 for Identification is the amount that appears on the company's books. This was set out on the Company's books at the rate of three and a half cents per m. c. f. for the year 1922. That is the amount set up on the company's books, irrespective of what the actual retirements were. I have only included here the amount set up as retirement expense. I cannot say offhand whether the actual retirements were more or less than the sum I have shown for that year. I know at the end of 1923, the actual requirements are very much larger than the reserve. I have a statement of it here, and I can get the figures very readily.

As to the item of Taxes, I prepared a separate statement [fol. 1267] showing how the item of Taxes is made up, which appears in the statement "Cost of Production and Distribution." That statement of details eliminates all taxes not applicable to the gas business, and eliminates taxes attributable to property not shown in the Alrich schedules as used and useful. A statement of taxes, December 31, 1922, to accompany the statement of Cost of Productions and Distribution for that year.

((Statement of taxes for year ended December 31, 1922, marked Plaintiff's Exhibit No. 814 for Identification.)

On plaintiff's Exhibit No. 813 for Identification the item of Interest on Unpaid Taxes represents interest accrued on taxes remaining unpaid—on taxes due and remaining unpaid during any portion of the year 1922, and does not include interest on taxes not applicable to the gas business. That is, so far as taxes on properties used in the gas business, this item is the amount accrued on those taxes during any part of the year 1922. Interest was accrued at the legal rate appearing on the tax bills, seven per cent. I have eliminated from interest on unpaid taxes the interest on unpaid taxes not applicable to gas operations as shown in my schedule, Plaintiff's Exhibit No. 814 for Identification.

The items under the caption "Deduct Miscellaneous Operating Revenues" are revenues accruing to the company from the various sources there shown, and I have indicated the sources from which they are obtained in the books of account and the variations from the ledger figures. In the item of Miscellaneous Rent Revenues, I included the revenues from wharfage under that item, and deducted from [fol. 1268] the ledger figure money derived from non-gas property, leaving the total shown. The wharfage included is $721.65.

The item of revenue from sales of gas on page 3 is an aggregation of respective gas sales accounts in the ledger. The total sales of $25,171,496.28 are the result of adding together three accounts: the commercial metered gas, the prepaid gas, and lighting public buildings, from which I have deducted the amount of $2,787.39, which is the aggregate of the account "Deductions and Allowances," leaving a net of $25,168,708.89. Aside from these deductions and allowances which appear on the ledger, this compilation showing the total sum of revenue from sales of gas is based on the rates in effect during 1922. I have shown here the full revenue from the sales of gas according to the company's books under the dates in force during that year, and then have arrived at the average figure by dividing the total sales by the total number of cubic feet sold.

During the year 1922 I find in the company's records

that the company had various rates for different portions of that year and it is set forth on this statement. The note at the foot of sheet 3 of Plaintiff's Exhibit No. 813 for Identification, states the rates actually charged during different periods of the year as indicated.

This Exhibit No. 813 for Identification is a true and correct statement of the cost of production and distribution of gas by this company for the year ended December 31, [fol. 1269] 1922, prepared in the manner to which I have testified.

Preliminary cross-examination by Mr. Donnelly:

Referring to Plaintiff's Exhibit No. 813 for Identification, I obtained the number of cubic feet of gas purchased from the Astoria, New Amsterdam, New York Mutual and Standard Companies, from the bills rendered by the separate companies. The prices appear on the bills, on each bill, and the figures which are set out at the right in the Cost Per M. C. F. column are the figures obtained by dividing the total amount by the total cubic feet purchased from each company. I did not get the figures for the use of manufacturing plant capacity of the Astoria and Mutual Companies from Mr. Woods' report. I got those figures from the compilation of the bills recorded in the books of the Consolidated Gas Company, and aggregated by me from the ledger account and from the bills themselves.

I did not use Mr. Woods' report as the source of the information contained in Plaintiff's Exhibit No. 813. I testified that the bills were rendered in accordance with the terms of the Woods Report.

We checked the rates appearing on the bills rendered against the station cost as shown by the book form reports of the respective companies. I did not go back of the book form reports of the respective companies for the purpose of checking these bills or the rates shown on the bills.

By Mr. Ransom:

I did not obtain the figures in Plaintiff's Exhibit No. 813 for Identification from the books or records of any company other than the Consolidated Gas Company.

(Plaintiff's Exhibit No. 813 for Identification received in evidence.)

Direct examination (continued) by Mr. Ransom:

I have set forth on the first sheet of Plaintiff's Exhibit No. 814, for identification the different kinds of taxes that [fol. 1270] were assessed against the Consolidated Gas Company for 1922 gas operations. I have summarized the sheets which immediately follow it, and I have stated a reconciliation with the books at the bottom of the sheet. The following pages give the details, including the division between the gas business and non-gas business, of the New York State taxes, both gross earnings and excess dividends, and the New York City taxes on real estate, real estate of corporations, special franchise and the personal tax assessed against the New York Mutual Gas Light Company, the United States Government taxes on capital stock and Federal Income tax. It gives truly and correctly the details of the tax item shown on Plaintiff's Exhibit No. 813.

(Plaintiff's Exhibit No. 814 for Identification received in evidence.)

This schedule of taxes in Plaintiff's Exhibit No. 814, showing the details of taxes applicable to the gas business, which is set forth as a single item in Plaintiff's Exhibit No. 813, relates only to taxes paid by the Consolidated Gas Company itself, with the single exception of the portions of the taxes assessed against the Mutual Company, which were taken over and assumed by the Consolidated Company.

This item of taxes shown in Plaintiff's Exhibit No. 814 does not include the taxes upon the plant or distributing system owned by other companies but used in the service of the Consolidated Company. Taxes included in the sums billed by other companies to the Consolidated for use of manufacturing capacity or distributing system, are not included in the figures of taxes applicable to the gas business on Sheet 1 of Plaintiff's Exhibit No. 814.

I have prepared a summary showing the details of the sums paid by the Consolidated Gas Company in 1922 for purchased gas, the use of manufacturing plant capacity, and

the use of distributing system, to the Astoria, New Amsterdam, New York Mutual, and Standard Companies.

(Marked Plaintiff's Exhibit No. 815 for Identification.)

[fol. 1271] I prepared in a similar manner as with respect to Plaintiff's Exhibit No. 813, a statement of cost of production and distribution for the year ended December 31, 1923. There were no adjustments which related to the New York Mutual Company's situation in the year 1923, but there are some other differences from the books. The item of gas oil, $2,000,021.80, is $2,588.96 more than the amount shown by the books, due to our having omitted a credit to production in February, 1923, of that amount, representing an allowance by the Standard Oil Company of New Jersey for 49,909 gallons of slop oil received at their Bayonne refinery from the Mutual plant in East 14th Street on August 30, 1922. This amount was allowed to the company after it acquired the property of the Mutual Company, but was property that had been shipped by the Mutual. I therefore eliminated it.

The item of gas making labor, $375,139.60 includes $83,287.82, the total of the labor columns in Miscellaneous Works Expense account. The item of repairs, $433,023.64 excludes repairs of the 14th Street and 42nd Street stations, except the repairs to the holders, shown separately in the amount of $9,574.36 on Sheet 2.

In the distribution of cost of operating the General Office [fol. 1272] Building, the company at our request made a reallocation of floor space, excluding the Auditorium, in conformity with the method adopted in 1922, and with this reallocation as a basis we redistributed the cost of operating the General Office Building with the result that the items on the cost statement exceed or fall short of the book figures by the amount shown in the following tabulations:

Items less than books by amount shown:

Supplies and Expenses of the General Office		$629 13

Items more than books by amount shown:

Distribution, superintendence and supplies and expenses	$7 71	
Commercial Expenses	74 45	
Claims and Arrears Expense	5 12	
Miscellaneous General Expense	65 48	
		152 76
Or a net charge of		$476 37

Miscellaneous Operating Revenue Deductions account on the ledger, which is a non-gas account, is correspondingly increased.

Miscellaneous General Expenses $176,061.06, excludes gas rate appeal No. 3, $86,458.06 and expense in re P. S. C. hearings $113.56, which are shown separately. Both items are separate columns in the Miscellaneous General Expense account.

Undistributed Adjustments credit $134,658.60. This credit is $3.50 less than the amount shown by the books, said amount representing a plumbing bill for work done it [fol. 1273] 329 Avenue A, charged on the books to Miscellaneous Operating Revenue Deductions and transferred by us to the debit of Undistributed Adjustments where they had been in the habit of dealing with such items.

Repairs, Insurance, etc., on property rented to others $547.77 is made up as follows:

Miscellaneous Operating Revenue Deductions account is $301,429.61. The Taxes Accrued column is deducted $92,815.94, leaving the balance of $208,613.67, being the totals of the columns Repairs to Buildings, Operating G. O. Building, Sundries, and from that I have deducted non-gas items included therein of $208,062.40, and the item above referred to $3.50, making a net in that account of $547.77.

For the item of taxes, I have prepared a separate statement setting forth the detail, the same as I did for 1922. Interest on Unpaid Taxes, $115,042.57, is $9,848.80 less than the amount shown on the books. This amount represents the interest accrued during 1923 on the Real

Estate of Corporations Taxes for 1923, which taxes were cancelled in 1924 prior to the preparation of our statement.

Rent of Gas Appliances, $1,547,152.89, is $47,841.12 more than the amount shown by the books, due to our having applied the correction on the books of 1923 to 1922. The correct amount is shown here.

Interest on Bank Balances, $58,638.74 is made up of Interest on Bank Balances, $58,536.06 and Interest on Consumers' Final Bills, that were included in the Miscellaneous [fol. 1274] Interest Revenue account, $102.68. In my expense items as to cost of distribution the interest on consumers' deposits appears on Sheet 3 as $94,032.42. I have shown interest on bank balances and interest on consumers' final bills, as a deduction from the cost of distribution and other expenses.

The Rentals of Jointly Used Facilities, $64,469.57 is the total book figure, $207,128.71, less 8 per cent return on the investment included in rental, $142,659.14, leaving the balance $64,469.57.

Miscellaneous Rent Revenue $75,865.12 is made up as follows:

The Miscellaneous Rent Revenue account $522,232.79, less the non-gas items included therein of $448,379.32, leaving a balance of $73,853.47, to which is added the item of Wharfage $2,011.65, making the total of $75,865.12.

With respect to the item of Retirement Expense on this statement I have here again set it up at the sum accrued by the company for this purpose, the amount set upon the books; that is, 3½ cents per thousand cubic feet, irrespective of the actual amount of the retirements. I know there was a large debit balance in the Retirement Reserve over and above the amount set up, but irrespective of the actual retirement expense I have set up only the charge of 3½ cents per thousand cubic feet for the quantity of gas actually sold.

I have set up in a note the rates actually charged by the company during the year 1923, with the amounts paid to consumers in excess of a dollar, from June 1, 1923, credited to its Suspense account. I made this note on here [fol. 1275] that the sales of gas for the year amounted to 24,057,694,200 cubic feet and the revenue therefrom, ex-

cluding the amount carried in suspense, amounted to $25,968,078.77, or an average, which is a computation, of $1.079 per M. C. F. I have set down the rates which were in effect. That is, the same rates were charged throughout the year, but from June 1, 1923, the excess over a dollar was put in the Supense account to which I have referred.

There is no figure in this cost of production and distribution for the year 1923 which I obtained from any book or record of a company other than the Consolidated Gas Company. It is true and correct on the basis which I have described.

(Plaintiff's Exhibit No. 816 for Identification received in evidence.)

With respect to the tax items, I made that up in the same way as I testified I prepared the details of the tax item on the 1922 cost of production and distribution statement. First, a summary statement and then a supporting schedule showing the details of the division of taxes between the gas business and the non-gas business, and also the reconciliation accordingly with the books, at the bottom of the first sheet. That is true and correct on the same basis.

(Marked Plaintiff's Exhibit No. 817.)

I prepared a statement of the details of the figures shown in Exhibit 817 so as to show the elements entering into the price paid by the Consolidated in 1923 for purchased gas, use of manufacturing plant capacity, and use of distributing system. As to the first sheet of that statement entitled "Summary of Purchased Gas," I obtained that [fol. 1276] information from the books of the Consolidated and the bills, and as to the second and third sheets relating to the payments made for use of manufacturing plant capacity and distributing system. I obtained the amounts of money there from the bills, referring to the totals. As to the splitting up of those items as between Return on Investment, Taxes, Renewals and Replacements, and Insurance, for the proportions for those subdivisions, I had to go both to the Woods Report and a letter written by Mr. Woods.

(Statement marked Plaintiff's Exhibit 818 for identification.)

(Letter marked Plaintiff's Exhibit No. 819 for Identification.)

When I referred this morning to the reports of George E. Woods, I meant the two documents which are marked Plaintiff's Exhibits Nos. 765 and 766 for Identification in this case. December 19, 1922, and December 18, 1923, are the dates of the two reports.

(Marked Plaintiff's Exhibit No. 765 in evidence. Marked Exhibit No. 815 in evidence. Marked Plaintiff's Exhibit 818 in evidence.)

Cross-examination by Mr. Donnelly:

The company does not repair its own gas meters, with the exception of some very minor repairs which are made in the shops, but the repairs are all made by the Standard Meter and Appliance Repair Shop, which company renders bills against the Consolidated Company for the repairs [fol. 1277] made by it each month. I examined the bills which were duly approved by the properly authorized officials of the Consolidated Gas Company. I took all of the information as contained in the vouchers to which the bills of the Standard Company are attached, that being the source of my information. The item on the same sheet "Repairs of Buildings" $19,428.10 does not include repairs to the General Office Building. On this sheet 3 there are no repairs to the General Office Building in the item of Repairs of Buildings. All the expenses in connection with the operation of the General Office Building are apportioned between the Consolidated Gas Company and the other tenants of the building in the ratio of the average space occupied for the year 1922, and the Consolidated's proportion of the cost of operating the General Office Building is divided by them and distributed to the various operating accounts according to the departments occupying the space. I have not set forth separately on this schedule the cost of operating the General Office Building. As I say, the Consolidated's proportion of the cost of operating the General Office Building is divided by them and charged to the various accounts in the operating expenses according to the depart-

ments occupying space. Therefore, there is no single item [fol. 1278] which shows the repairs to the General Office Building in this schedule. The total of items entering into the cost of operating the General Office Building for the year 1922 amounted to $315,285.61, in which there appears the item Repairs to Buildings, $35,325.22. Now, of the total of $315,285.61, there is apportioned to the Consolidated Gas Company 35.16 per cent, or $110,854.42 and that amount is distributed by the Consolidated Company to Distribution Supplies, and Expenses, General Office Street Department, General Office Meter Department, Commercial Office Supplies and Expenses 15th Street Branch, Promotion Expense Gas Appliances Department, Promotion Expense Utilization Department, General Office Supplies and Expenses Miscellaneous, General Office Supplies and Expenses Payroll Department. Miscellaneous General Expenses, and it is apportioned among those on the basis of the ratio of the square feet occupied by the respective departments, varying all the way from sixteen-one-hundredths of one per cent up to 19.22 per cent. I relied upon the report of the Construction Department as to the space occupied by the Consolidated Gas Company and other tenants of the building. I think that was made by Mr. Alrich. I do not recall, without referring to the schedule itself, whether that was [fol. 1279] signed by Mr. Alrich or Mr. Morris. At any rate it is a report made by the Construction Department of the Consolidated Gas Company, giving the apportionment for each company. It comes from Mr. Morris, the Chief Engineer of Construction.

In the item "Salaries, General Office," salaries, general office, $445,771.24, the account itself on the ledger has fifteen columns in it, and the expenditures as made and classified [fol. 1280] in those different columns, include the salaries paid to the executive officers of the company. I have the total amount of them. I have not got the salaries paid to the officers individually. I do not think we made an analysis showing the amount paid to the individual officers. $163,316.49 is the portion of the total classified as general officers. My analysis does not enable me to state who the general officers who are included in that amount. We did know at the time we checked the payrolls. We had the payroll in front of us, showing the identity of the general officers and

the amounts paid to them monthly. They are the documents, underlying the entries in the ledger. The $445,771.25 is made up as follows:

General Offices	$163,316.49
Engineering Department	34,445.70
Commercial Department	18,829.65
Insurance Department	24,525.92
Transfer Department	14,245.75
Accounting Department	39,421.28
Auditing Department	1,839.00
Statistical Department	11,895.00
Cashier's Department	21,499.63
Chemical Department	11,741.21
Pay Roll Department	13,822.46
Corridor Men	5,063.00
Telephone Operators	6,313.57
Other Salaried Employees	77,062.38
Carpenters and Mechanics	1,750.20

[fol. 1281] I do not understand that the Consolidated Gas Company Transfer Department has anything to do with the stock of any other company, except the Consolidated Gas Company. Therefore I did not make any analysis of the expenses, because the Consolidated Gas Company only handles its own affairs or, if it handles the affairs or transactions for other companies, it makes a charge against the other companies. I do not recall I have had any conversation with any officers of the company, to make inquiry as to whether they handled stock for other companies or not. I most certainly do know that it has income from other than its gas business. I know that those receipts are the result of its investments in other companies and those investments, in return, are the result of stock issues by other companies, not by stock issues of the Consolidated Gas Company. I do not recall specifically that I have made any inquiry as to whether they handled the stock of other companies in that department or not. The Transfer Department of all companies is ordinarily for the purpose of handling its own capital stock, which every company is bound to do unless it has a transfer agent, and the Consolidated Gas Company's Transfer Department perform the function which a transfer agent would ordinarily do,

and therefore I have assumed, without asking the question, they transfer its own share of capital stock between its own shareholders. It it had been otherwise, I am very sure my partner would have informed me; my partner, Mr. Moe [fol. 1282] ran, who has made some other examinations other than those that we have made in connection with this case.

The account "Supplies and Expense, General Offices" is subdivided into twelve different classifications in the ledger. The total of $169,269.40 is classified in the ledger under the following headings: Officers' Expenses, $5,182.38; Stationery and Printing, $22,198.79; Towel Service, $1,772.63; Telephone Service, $12,782.14; Telegrams, $254.02; Sundry Repairing, $759.72; Draft-men's Supplies, $3,054.86; Photographic Department, $2,710.88; Laboratory, $1,873.67; Shipping Department, $5,204.41; Furniture and Fixtures, $9,963.96; Miscellaneous, inclusive, $103,411.94.

Referring to the item of General Law Expense, I made an analysis of that account, and reached the conclusion that none of that was properly chargeable to rate case expense. The charges to General Law Expense cover fees which I presume is a retainer, paid to Messrs. Shearman & Sterling.

It is not paid all in one amount. My analysis does not show what the services were for; it only says services rendered by Messrs. Shearman & Sterling. A portion of the $128,112.62 for "General Law Expense," being $35,000 paid to Sherman & Sterling, is a balance of the total charge of $172,500. The information which I have is that it is a retainer and professional services from January 1, 1919 to June 30, 1922, including special services, re rate litigation $172,500 on which there had been received on account $137,500, leaving a balance of $35,000, that is included in the $128,112.62. I cannot say how much of that $35,000 is attributable to rate case expense or services in connection with rate litigation. The bill is not broken down in such a way that I can tell. I do not know how much of that is applicable to 1922, for services in 1922. It would be pretty hard to tell when the attorneys' services are rendered specifically. I included that amount paid by the company [fol. 1283] and charged to their general law expenses in the year 1922. The vouchers presented in connection with Shearman & Sterling's bills do not specifically set forth

what they are, any more than professional services, as I have read. Retainer and for professional services re rate litigation, $172,500, on which there has been received on account $137,500, leaving a balance of $35,000. I do not know that those professional services were rendered to the Consolidated Gas Company in its gas business. I presume that the item further down on the third sheet, of expenses re gas rate appear No. 2, $30,855.54, is the previous rate case to this one. There are quite a number of items. I do not think the vouchers themselves disclose the period which they cover. They are expenses in connection with the gas rate appeal No. 2, paid by the company in 1922. If I read them possibly you will get the nature of them more quickly. Hamlin & Co., for indemnity bond before Richard Welling, Special Master. Binding Gas Testimony. Minutes Re Consolidated Gas Company, and Kings County Lighting Company—Printing Consolidated Gas Company brief in the United States Supreme Court. Whitman, Ottinger & Ransom, for legal services. Bond given by the Consolidated Gas Company upon its appeal from the final decree of Judge Hand. Opinion of the Supreme Court in the Consolidated Gas Company case. Opinions re Mutual Gas Light Com- [fol. 1284] pany, Standard Gas Light Company, New Amsterdam Gas Light Company, and East River Gas Company; printing brief of the Consolidated Gas Company, books, leaflets, reports, re Consolidated Gas Company and its affiliated Gas companies; seventy two volumes of testimony of gas cases in the District Court; Special Services re rate case; binding six volumes, 80-cent rate gas cases; report of six gas cases to Adams & Chambers and binding six volumes, 80-cent gas cases. The item of minutes of the Kings County Lighting Company, is an amount paid to Adams & Chambers for minutes re Consolidated Gas Company and Kings County Lighting Company.

The item of expenses re P. S. C. hearings $43,491.65 is an expenditure made during the year 1922 and is for the valuation of buildings of the Consolidated Gas Company, for a copy of the report in the Westchester Gas Light case and for minutes of hearings re the Brooklyn Borough Gas Company, Kings County Lighting Company, Newtown Gas Company, the Queens Borough Gas and Electric Company, and the Brooklyn Borough Gas Company. It is for copies

of report as to block rates, rate sheets, reports as to block rates. Opinion and decree of July 2nd and Master's report for the Mutual Gas Light Company, the East River Gas Light Company, the New Amsterdam Gas Light Company and the Standard Company. It is for copies of Hylan v. Consolidated Gas Company of New York, proceedings before the Special Master in the Flatbush Gas Company v. Prendergast, et al. It is for copies of hearing re Queens Borough Gas and Electric Company; services and expenses of testifying before the Public Service Commis-
[fol. 1285] sion; minutes of hearing re the Queens Borough Gas and Electric; valuation of its buildings, valuation of plant. It covers legal services, preparation of testimony re properties of the Consolidated Gas Company, legal services, minutes re Block Rates, minutes re Queensboro Gas & Electric Company, minutes re Consolidated Gas Company; the Brooklyn Union Gas Company and others. It covers minutes of hearings re Standards of Purity, Illuminating, Power and Heating. It covers minutes of the Queensboro Gas & Electric Company, Standards of Purity and Power. Queensboro Gas & Electric Company, Standards of Purity and Power—and so on it goes. There is $300 paid to J. B. Klumpp for services and expenses in testifying before the Public Service Commission. The analysis which I have states specifically services by counsel, Messrs. Whitman, Ottinger & Ransom, and those services are not charged in this account. They are charged in this account and out again. The- are charged to the other companies. They were paid by the Consolidated Gas Company and then billed by the Consolidated Gas Company to the other companies because the bill was applicable to other companies. The affiliated gas companies. There is a very small amount in here. There is $12,254.52, legal services, charged in this account.

[fol. 1286] April 23, 1924.

Met pursuant to adjournment.

ARTHUR W. TEELE, a witness in behalf of the plaintiff, resumed the stand.

Cross-examination by Mr. Donnelly:

Referring to the item of Claims and Arrears Expense on the third sheet of Plaintiff's Exhibit No. 813 schedules for the year ended December 31, 1922, we made no separate analysis of that account. The figures on my schedules were taken by me from the ledger account in evidence. Without seeing the account I cannot say specifically what the entries are in that account. The underlying data for all the entries in the ledger are the journal entries supported either by reports or pay rolls. I found in making up this schedule with reference to this particular item that some of it was allocated to the subsidiary companies of the Consolidated Gas Company. That is one of the expenses of the company, one of the expenditures of the company, rather, which is prorated between the allied companies on the basis of the meters on the district of each company.

The expenditure for engineering and superintendence is a capital account on the books of the Consolidated Company and is carried until the end of the year, at which time it is prorated between the companies on the basis of the capital expenditure for construction during the current year. The allocation of expenditures to other companies and the billing to other companies is done under the direc-[fol. 1287] tion and authority of the Secretary of the Company, and the amount of expenditure is divided in the statement sent to the different companies. I have relied upon that statement and the verification of it by the Secretary of the Company. I do not know what counsel has in mind by an independent study of it. I could not verify it in any other way except by going to the books of the other companies.

The overhead expenses of the Street Department are prorated on the basis of the ratio of main mileage among the Consolidated, New Amsterdam and Standard Companies. The main mileage used in the formula was checked against the memorandum made by C. C. Simpson, the Gen-

eral Superintendent of Mains, which is on file in the Accounting Department, dated January 26, 1922. For the distribution of that expense in 1922 it is checked against a similar statement in 1923. We took the bills, took the expense and verified the ratios determined by the main mileage, and checked the calculations to see that the proper apportionment of the expenditure had been billed in accordance with the formula followed on the basis of the main mileage. I relied on the basis which the company had followed in making its distribution. I did not undertake to make any different distribution from that made by the company.

[fol. 1288] By the Master:

I accepted the allocation of the accounts which were made between the Consolidated Gas Company and the affiliated gas companies, as made by the company; and made no independent determination or attempt to determine whether those accounts should have been allocated on the basis that the company had allocated. Whatever basis the company had assumed for the entries in its books or for the distribution of the entries, I followed and simply summarized the results obtained from the books and the various accounts and subdivisions thereof. I checked all of the data wherever the information was available.

By Mr. Donnelly:

That is true of these departments: The Promotion Department, the Department of Claims and Arrears, the Chemical Department, the maintenance of pressure gauges, operating the 63rd Street storage station, operating the Kingsbridge Gas Storage Station, Maintenance of general office restaurant, maintenance of meter shop school, pumping drips, service of operating general switchboard, service chief engineer, advertising manager and steam engineering, special meter department engineering service, advertising sign on the roof of the General Office Building, Society of Gas Engineering of New York, Society of Gas and Electric Accountants, Gas and Electric Choral Society, Gas and Electric Community Club, Gas Company Employees Mutual Aid Society.

I found that, with reference to some of the bills to the

subsidiary companies, that the Consolidated Gas Company [fol. 1289] added to the labor and material cost a charge of 5 per cent in some cases and in other cases 10 per cent and in other cases 15 per cent. It is an arbitrary percentage which is added by the Consolidated Gas Company in its charges. There is no calculation made and there is no statement made as to exactly what it does cover. It is intended to provide for overhead expenses not specifically allocated to the bills. I did not make any investigation of what the percentages purport to cover.

Referring to the item of "Miscellaneous General Expense" on the third sheet of Exhibit No. 813, the ledger account is divided into 13 different classifications and I will give them. The classification in the account is divided into the following: Rewards, $790.75, Meeting fees $18,432.36, Books and periodicals $2,133.92, Society of Gas Engineering $7,017.10, Society of Gas and Electric Accountants $345.60, Other societies $15,239.16, News Service $1,938.24, Notary fees $239.16, Supervision of Electrical Apparatus $4,816.42, Tabulating gas consumption $36, Miscellaneous $132,594.93. The total being $183,418.23, the amount shown on the schedule. The "Meeting Fees, include the following: Meeting of Budget Committee, Executive Committee, Stockholders' Committee, Committee of Accounts, Finance Committee, Directors, Special Audit Committee, B. T. U. Committee, Committee on Sale of Stock to Employees, Committee on Sale of Securities, Committee on Adjustment to the Standard, Directors' Meeting Re New York Mutual Gas [fol. 1290] Light Company, Committee on Sale of Stock, and special meetings of stockholders. Those are all Consolidated Gas Company Committee meetings for which fees are paid to those who attend them. The different committees are composed mostly of directors or trustees of the company. I do not know the nature of the charges for the meeting of that B. T. U. Committee that I enumerated. I have not the personnel of the Committee. Following the practice of the company, they have paid to the members of the Committee a sum of money each time there has been a committee meeting. The number who attended each meeting is set down and the amount paid at each meeting is set down, but I have not the personnel of the committee.

Speaking of the Society of Gas Engineers and the Society

of Gas and Electric Accountants, one of the subdivisions of Miscellaneous General Expense, the total sum of $15,073.75 is made up of numerous expenditures, the largest item of which is the Company's Membership Dues of $5,555.89, Employees' dues, $354.90. Those are all Consolidated Gas Company employees. No part of this expenditure of $15,000 in connection with the Society of Gas and Electric Accountants etc, is apportioned to any of the Consolidated Gas Company's affiliated companies.

[fol. 1291] Referring to the item of "Miscellaneous General Expense, Miscellaneous, $132,594.93," there are two sheets of items here, making up the detail of that. The books and records show what the $132,000 odd cover, that is, the ledger account and the underlying data. The ledger account itself shows what the dollars are without giving the details, and back of that we would have to go to the vouchers to find out where the details are made up. I think most of those items are vouchered. There may be a Journal entry in here, and I see one petty cash entry in here—some Journal entries and some vouchers. The entries in the Ledger account indicates from which source the entry in the Ledger has come, whether it is from the petty cash voucher or Journal entry, or otherwise.

Referring to the company's method of charging to the account Uncollectible Bills, sixty days, I believe, is the period of time after which the bills not collected, are charged to Uncollectible Bills. If they are subsequently collected, they are credited. In other words, when sixty days has elapsed the bill has become due, it is charged as an uncollectible bill. That determination is made by the superintendent of each branch where the accounts are carried, I believe. In the accounts carried at the General Office Building, I do not think there are any Uncollectible Bills. The Municipal bills and very large consumers who have a great many meters in different districts and where the consumer wants his bill rendered from one point are all carried at the Commercial

[fol. 1292] *great many meters in different districts and where the consumer wants his bill rendered from one point, are all carried at the Commercial* Department, General Offices.

The items of interest on unpaid taxes covers interest on Real Estate taxes, applicable to property used and useful

in the gas business, $18,491.47, interest on taxes assessed as Real Estate Corporations, $101,416.54 and Interest on Special Franchise Taxes, $9,232.99. Those taxes have re-
[fol. 1293] mained unpaid, speaking of year 1922 schedules now; as far back as 1913, the Real Estate of Corporations Tax—1913, 1914, 1916, 1917, 1918, 1919, 1920, 1921 and 1922; the Special Franchise Taxes, 1914, 1916, 1917, 1920 and 1921. As to the interest on property used and useful in the gas business, I got that information as to its use and usefulness from Mr. Alrich.

The 1923 item I made up as follows: On the Real Estate Corporation Taxes, 1913, 1914, 1916, 1917, 1918, 1919, 1920, 1921 and 1922; it does not include 1923, because they were cancelled prior to my making up this statement for 1924. That is all for the Real Estate Corporation Taxes. No interest on unpaid taxes on the company's real estate, or on the special franchise taxes.

The amount shown in my schedule on Sheet 3 of Exhibit No. 813, $600,815.08, for the use of distributing system. That is the amount shown by the account on folio 1087 of Ledger B for 1922. The underlying data for that is the bills rendered to the Consolidated Gas Company, by East River Gas Company of Long Island City and by the Standard Gas Light Company. The terms under which the bills are rendered are set forth in Mr. Woods' report. The detail of it is fully set out in my schedule, Exhibit No. 815, showing the companies and the amount of the investment and the rate per annum charged.

On the second sheet Plaintiff's Exhibit 813, I included separately, an item Repairs 14th Street and 42d Street Reserve Plants (Coal Gas) $19,258.52. I think there was a small negligible amount of coal used in heating the water
[fol. 1294] for the holders. I do not know of any gas oil being used there. I do not recall any expenses on the company's books for that item, or for gas making labor at 14th or 42d in 1922 and 1923. The only expenditure, speaking of 1922 for the moment, at 14th Street and 42d Street, is embraced and included in my item of Repairs, except for the expense in connection with the holders. My recollection is that in 1922 the 15th Street Holder Station was a part of the 14th Street plant. In 1923 it is marked as a separate holder station. It is, as a matter of fact, located

across the street. It is on the north side of 15th Street. There being no gas manufactured at 14th Street, I do not see how the 15th Street holder could very well have been used in connection with the plant at 14th Street.

Included in my item Repairs at the 14th and 42d Street Reserve Plants (Coal Gas) are the classification of expenditure that was made there was for Repairs to Works and Station Structures $8,625.60; Repairs Furnaces, Boilers and Accessories $1,814.13; Repairs to Steam Engines $213.48; Repairs to Miscellaneous Equipment $999.28; and Repairs to Works Tools $78.63; with a credit from Benches and Retorts of $25, making—I haven't the total of the 14th Street plant. And at 42nd Street the items of repairs were for Works and Station Structures, $4,632.02; Furnace, Boilers and Accessories $547.72; Benches and Retorts $820.83; Purification Apparatus $16; Miscellaneous Equip-
[fol. 1295] ment $588.52; and Works Tools $947.31; the total being $19,258.52, as shown in the schedule.

I have taken these expenses as they appear upon the company's books and the underlying data, which I have checked, as allocated by the superintendents and engineers. I do not think a business man has to have an intimate knowledge of every item of expenditure that is made by those working under him generally, to determine whether a thing is a repair or a construction item. I would not have to have that knowledge of production and distribution in order to give my opinion about it. I could form my opinion just the same. I would not undertake to say under oath, without the necessary gas engineering knowledge and without the necessary knowledge as to whether or not the plants were being conducted economically and efficiently, that the expenditures reflected in their books were proper expenditures of production and distribution.

I did not mak any study of the company's accounts for the purpose of making a comparison in one year with the costs of corresponding items in another year to see if any costs were unduly high in 1922 and 1923 as compared with other years. I made no study of the indexes reports beyond that already testified to and that was to check the meter readings as shown for five hundred accounts in one branch and three hundred in another, and the meter read-
[fol. 1296] ings for the consumers' accounts kept in the general office.

I did not make any study of the prices paid by the company for materials other than coal and oil to see if those prices were reasonable as compared with prices paid by other companies for the same materials, or of analysis of the company's repair accounts to see as to whether there were included any extraordinary repairs or deferred repairs. I relied upon the allocation of the company's superintendents and engineers. That would include the works, the mains, the services, the appliances and the buildings. As to all allocation of materials used or labor for repairs. I did not examine the vouchers and other records sufficiently to indicate to me whether or not there were any charges included in the disbursements for the year 1922 applicable to expenditures incurred for previous years. I assumed that all disbursements made in 1922 were for expenditures incurred in that year, except so far as I have indicated in that memorandum; and the same for 1923.

[fol. 1297] On the first sheet of Plaintiff's Exhibit No. 815, the item entitled "Station Cost" is in dollars the total cost to the Consolidated Company of the gas purchased from Astoria, and the figures in the column headed Per M. C. F. is a computation made by myself, dividing the total amount by the total number of cubic feet, to arrive at the average cost for the total gas purchased from Astoria for that item. The figures under the item Station Cost are not intended to mean the price at which the gas was purchased. The figures under Station Cost in the Amount Column are the aggregate of the bills or, rather, the aggregate of that item on the bills designated as Station Cost. But the figures appearing in the column Per M. C. F., which is also under Station Cost, is a computation made by dividing the total number of cubic feet. The amount that would appear in the M. C. F. column, if I had stated the bills separately, would have varied from month to month. This only gives the average. In rendering their bills, they divide the bill into the three items I set forth.

The next column on that first sheet of this exhibit, en-[fol. 1298] titled General and Miscellaneous Expenses is that portion of the expense of the Astoria Company which is billed against the Consolidated Company as a part of the cost, on the basis of apportionment; on the cubic feet of gas

made by the Astoria Works. The apportionment is made in the Astoria office. I do not know by whom; I can not say that I do know who makes the exact figures. The component parts of this item $107,393.98, designated as General and Miscellaneous Expenses, included in the ledger are under the following accounts: Salaries General Office, Supplies and Expenses General Office, Law Expense, Contributions to Employees Aid Society, Superannuation, Miscellaneous, Accidents and Damages, Undistributed Adjustments, and Duplicate Gas Charges. We have not got the total amount of the expense before allocation. I have not the figures of the Astoria Company here, but the information I have been giving you is from a statement accompanying the Astoria bill; so that I am not prepared to state what the the total of the expenses is on the books of the Astoria Company. This $107,393.98 represents the allocated expense.

I have indicated the nature of the expenses included in that item of Miscellaneous and General Expenses. I did not mention taxes. Insurance is not included. It does not include the company's provision for renewals and replacements.

[fol. 1299] The last item on that sheet is the item Gross Earnings Tax. This amount is an aggregation of the amounts appearing on the bills. There is an amount on each monthly bill and this is an aggregate of the item. I do not know that this figure stands out on the books anywhere as a separate figure. It appears in their records, however. I am not yet prepared to state that it is an amount paid by the Astoria Company. It is an amount billed by the Astoria Company to the Consolidated Gas Company. I cannot say that the Consolidated Gas Company pays a similar tax on the same gas when sold to consumers. The Consolidated Company pays a gross earnings tax on its sales of gas.

The Consolidated Gas Company bought a considerable amount of gas from the New Amsterdam Company, as shown by its schedule. There is nothing in this case for General Miscellaneous expenses or for Gross Earnings Tax. The charges are made in the one case and not in the other, because they appear on the bills of the Astoria Company and they do not appear on the bills of the New Amsterdam

Company. The terms of purchase are different from the Astoria Company. The terms of purchase of the Astoria Company are different from the terms of purchase of the other companies. I know that the gas purchased from the Astoria Company is billed on this basis, and that that basis is an approved basis, by the authorized officials of the Con- [fol. 1300] solidated Gas Company. I know that the rate at which it is billed from The New Amsterdam Gas Company is also an authorized rate duly approved by the officers of the Consolidated Company. I know that the item is charged in one instance and not in the other under the terms of purchase. I am judging from the documentary evidence presented to me. The same thing is true of the gas bought from the New York Mutual Gas Light Company and from the Standard Gas Light Company.

On Plaintiff's Exhibit 815, the figures shown in the column headed Amount are the Aggregate of the monthly bills rendered by the Astoria Light, Heat & Power Company to the Consolidated Company and the aggregate of bills rendered by the New York Mutual Gas Light Company. The other figures that appear in that account are taken from the Woods' Report. That is, I have split them up in accordance with the terms of the Woods' Report. The records of the Consolidated Gas Company reveal the detail as to the make-up of these carrying charges. Their books show the total of the bills rendered by the Astoria Light, Heat & Power Company and the bills rendered by the New York Mutual Gas Light Company. The books themselves, speaking now of the ledger, do not show how the detail is made up. The Woods' Report does show.

By the Master:

The figures in the amount column are the aggregate of [fol. 1301] the monthly charges shown on the ledger, and those aggregations I divided up into the three subsequent columns, using for that purpose the information that I obtained from the Woods' Report.

By Mr. Donnelly:

To the best of my recollection, I did not see any bills which showed the amount of the investment with the As-

toria Light, Heat & Power Company of $18,666,500.81. The bills do not show that amount. I told you where I got all the rest of the figures appearing on this sheet. That item is not in the amount column. That is in the investment column. All the rest of the figures on that sheet were taken from the Woods' Report.

By the Master:

They are rather a compilation from information furnished by the Woods' Report, and the Woods' letter. Neither the Woods' Report nor the Woods' letter shows the figures set forth in the investment column and the rates to be charged. The other figures are compilations based on information shown by the Woods' Report.

By Mr. Donnelly:

I think I have stated clearly where all the figures on this sheet came from.

Speaking of the item $2,898,799.17, shown on my sheet for working capital, I do not know how Mr. Woods reached his conclusions. Nor do I know how much of that is included for materials and supplies. I do not know how he reached his conclusions.

[fol. 1302] There is shown on the same sheet of Plaintiff's Exhibit No. 815 a charge of $466,662.52 for taxes on pla- holders and accessories, and $80,501.34 on land, making a total of $547,163.86 charged to the Consolidated Gas Company for the item of taxes. I am not prepared to state what the actual amount of taxes on the land and plant of the Astoria Light, Heat & Power Company was in 1922. I do not know what the taxes paid by the Astoria Light, Heat & Power Company in 1922 were. I mean I have not gone far enough in my examination of the Astoria Light, Heat & Power Company to be able to state what the taxes are that were paid by them for the year 1922. I accepted entirely Mr. Woods' figure for those taxes, whatever is the apportionment of the percentage provided or set forth in Mr. Woods' report and which he allocated as being included by him for the purpose of covering taxes apportionable to these properties. It was his own conclusion. I did not go back of his apportionment. Likewise there is charged $279,997.51 for renewals, replacements and insurance.

With regard to the amount of the insurance which the Astoria Light, Heat & Power Company actually paid and the amount which the Astoria Light Heat & Power Company actually charged upon its books, I am not prepared to state what the Astoria Light, Heat & Power Company paid. This apportionment is in accordance with the information [fol. 1303] furnished by Mr. Woods. In other words, I made no comparison of the actual cost to the Astoria Light, Heat & Power Company for these items as compared with what they charged the Consolidated Gas Company. I made the apportionment in accordance with Mr. Woods' letter.

On Plaintiff's Exhibit No. 815, sheet entitled "Summary of Use of Distributing System," bills are rendered on the basis of the terms set forth in the Woods' report. Those bills do not reflect the costs as shown by the books. Two per cent. appears on this sheet as maintenance. That is the allocation made by Mr. Woods, the apportionment made. I do not know what expenditure that includes repairs. The Woods' report shows his allocation of these percentages for these purposes. $82,791.74, is the apportionment of the total charge to the Consolidated Gas Company. In other words, that is the charge to the Consolidated Gas Company by the East River Company. I do not know what proportion that is to the total amount that is charged in the books of the East River Gas Company for that item.

By the Master:

And if I did know, it would not make any difference in my schedules.

By Mr. Donnelly:

The charges are made in accordance with the agreement between the companies, the basis of which is the Woods' report. I am making an examination of the New Amsterdam books, but not in connection with the make-up of this schedule. I am not prepared to say that there is on the [fol. 1304] books of the New Amsterdam an item "Tunnel Maintainance" or to give any testimony whatever in regard to the New Amsterdam books at this time.

By the Master:

The figures shown in the amount column on this third page, are a compilation of the figures appearing on the ledger. And the other figures on the page are allocations made on the basis of information furnished by the Woods' letter.

By Mr. Donnelly:

On the 1922 Schedule, Exhibit No. 815, "Renewals, Replacements and Insurance" are shown at one and one half per cent. On the 1923 similar schedule, for the item of Renewals, Replacements and Insurance I have one half per cent. I think the Woods' report states why the percentage is reduced in 1923. In other words, I took the Woods' report. I did not go behind Mr. Woods' conclusions as set forth in that report, to see if the charge was proper. If I were asked the same question with reference to the maintenance, two per cent. on the 1922 detail schedule, and one per cent. as shown on the 1923 detail schedule, I would make the same answer.

Referring to Plaintiff's Exhibit 814, the tax on excess dividends is a tax of 3 per cent. on dividends in excess of 4 per cent. It is my understanding of the law that if a dividend of 4 per cent were paid, then there would be no tax, irrespective of what the company earned, and that the tax is applicable to the dividend paid irrespective of when the earnings accumulated. Should the company pay 25 or 50 per cent., it is my understanding there would be a tax on [fol. 1305] the amount in excess of 4 per cent. It is a tax which is assessed against the company. I have not undertaken to determine what it should be, but merely what was done. My understanding is that the dividend in excess of 4 per cent. is only a basis for determining the amount of the tax assessed against the company by the State.

Speaking of my 1923 schedules, Exhibit 817, and also speaking of the same subject of taxes, my computation does not assume dividends paid out of the earnings of any particular year. It assumes that this tax was paid that was assessed against the company in 1922 and in 1923. In making my apportionment of the amount to be assessed against gas operations, for the year ended October 31, 1923, I have

set down here the basis of distribution used by the company. That basis was the earnings for the year ended October 31, 1923. That is, the elements which are set down here, the totals for the years are stated—total credits and total debits for the year ended October 31, 1923. The records of the company show the same data that I have set forth on Folio 2 of Exhibit 817. This is the basis used by the company for apportioning this particular tax between its gas business and its business other than gas.

Page 2 of Plaintiff's Exhibit No. 817, is headed "Statement showing Distribution of New York State Gross Earnings Tax based upon gross earnings for the year ended October 31, 1923."

By the Master:

[fol. 1306] The items set down here are in accordance with the records of the company. The company did distribute this gross earnings tax between the gas business and other business. I have segregated the items into two classes and I have set them down in these two columns—those applicable to the gas business and those not applicable to the gas business, and in reaching the amount of gross earnings tax applicable to the gas business which I have used in my statement it has been computed as shown on this sheet.

By Mr. Donnelly:

It represents my idea of what is not applicable to the gas business. I have separated them as shown here. The separation is my construction. In other words, the company does not show that construction upon its books. The company has included the items of Miscellaneous Rent Revenue and Joint Gas Rent Revenue as applicable to the gas business on its books.

By the Master:

The company divided it in the same way with the exception of those two items. I have thrown out of this Joint Gas Rent Revenue that portion which represents the return on investment. The company did divide it as I have set forth, except as to the items Miscellaneous Rent Revenue and Joint Gas Rent Revenue. Those are the only two items

as to which I have eliminated from the company's figures certain amounts that I have set forth in the second column.

By Mr. Donnelly:

The company made a division of this tax on its books between gas operations and non-gas operations.
[fol. 1307] On the first sheet of Exhibit 814, is an item Real Estate of Corporations Tax $336,308.51. It is a tax assessed against the company. It is on the books as a liability and the tax bills had not been cancelled. The similar tax for 1923 was cancelled, having been cancelled in 1924 before we prepared this statement. The 1922 tax certainly is a liability of the company. It is assessed against the company.

I testified to some of the special franchise taxes which were still unpaid at the end of 1922, and I think there was nothing but the Real Estate of Corporations Tax unpaid in 1923. All special franchise taxes assessed against the company have been paid at this time. I am speaking without reference to any taxes of 1924, of course. I do not know of any proceedings with regard to those taxes still pending by the company.

By the Master:

In my schedule on Exhibit 813, under the head of "Taxes I included an item of taxes $1,865,624.40, taxes assessed against the company for 1922, whether paid or not. It does not include any taxes paid in that year for assessments in previous years. It only includes taxes assessed [fol. 1308] against the company for the year 1922, and, so far as the gross earnings tax and excess dividends tax are concerned, it is for the year ending October 31, 1922. This item shown on Exhibit 814 of Real Estate of Corporations $336,308.51 is the amount assessed against the plaintiff for 1922. It does not include any assessments of previous years. It say- it is the amount assessed for 1922, with the exception of the small amount included in the tax rate for local improvements, which is deducted from the total assessments as shown on page 7, and the Special Franchise Tax is the amount assessed for the year 1922. All of these taxes set forth in that schedule on Plaintiff's Exhibit No.

814 are taxes assessed for the year 1922, and the same thing is true of the taxes assessed for the year 1923, shown on the other schedule.

By Mr. Donnelly:

On page 9 of Plaintiff's Exhibit No. 814, I have an item entitled "Accounts Receivable (Sundry Consumers, Sundry Debtors, etc.)." This distribution between gas and non-gas business is the distribution as made by the company; of that total figure $2,193,401.01, Sundry Consumers is $1,179,371.71. The balance is Sundry Debtors $802,737.55, Accounts Receivable Installments, $137,600.35, and Accounts Receivable Branches, $73,690.40. That item represents sundry amounts due to the Consolidated Gas Company from various debtors other than consumers. Without [fol. 1309] looking at the detail of it I cannot say what is in it. It is based on this balance sheet of December 31st, 1921, and I have not examined the accounts for the year 1921, so that I cannot say what the detail of this item of Sundry Debtors is. I have set down here the basis by the the company in making its distribution between that portion of the tax applicable to the gas business and the portion applicable to other business. I did not make any analysis to ascertain whether as a matter of fact there were enumerated those items. This is the basis used by the company in apportioning that tax, and I have set it down here as being the basis. I took the company's basis of apportionment, without going back of that.

By the Master:

I accepted the company's basis in this instance and made my own in the case of the gross earnings tax, because the items of gross earnings are very clear to anyone whether they are applicable to the gas business or whether they are not. Another reason for it is that the gross earnings tax is a direct tax on earnings and the capital stock tax is a tax on the value of the shares, determined by the Government in one of three ways; so that the assets of the company shown by their balance sheet is only used as a measurement in the determination of that tax. This is the method set down here as the distribution of the tax be-

[fol. 1310] tween gas and non-gas. That is the company's allocation, but it does use these factors in its computation in determining the amount of the tax. It uses the balance sheet of December 31, 1921. In other words, these are from the tax retur-, these figures. I believe that these assets agree with the tax return.

By Mr. Donnelly:

In the case of this Consolidated Gas Company, the Government does not use the company's income statement and likewise the record of its sales of stock on the market.

I have in the schedule Federal Income Tax, amounting to $312,357.90 for the year 1922. The company estimated on its books for 1922 $350,000 as being the proportion to pay, but when the tax was paid in 1923 the amount paid by the Consolidated Company and apportioned to them was only $312,357.90. I have therefore only shown in this schedule the actual amount of taxes paid for that year. The Consolidated Company makes up its own Federal Income Tax retur-, and it also makes a consolidated Federal Income Tax return. It would not deduct bond interest, because it does not have any bond interest of its own. On the consolidated report, using the word "consolidated" there not as applicable to the plaintiff gas company, the company makes no deduction for bond interest, not for Consolidated bond interest. Whatever bond interest there is of [fol. 1311] affiliated companies of course is deducted in the consolidated income account and thereby the tax of this particular company is reduced. The total consolidated income tax was assessed against the Consolidated Company and paid by the Consolidated Company for itself and its affiliated companies.

By the Master:

When the Federal Government makes an assessment of income tax under a consolidated return, the Consolidated Company pays the whole tax. The assessment is made by the Government against the plaintiff and the plaintiff then apportions that tax so assessed against it, and paid by it in the first instance, among the affiliated companies. This amount of $312,357.90 represents the amount of that tax

which it apportioned to itself, and it is apportioned on the basis of the ration between the amount of tax that the individual companies would pay if they paid their income tax separately.

By Mr. Donnelly:

The assessment is made by the Government against the Consolidated Company, and the assessment is made on the basis of the return filed with the Government by the Company.

By the Master:

The apportionment of the tax is made on the same ratio as the tax that would have been paid by each company if it [fol. 1312] had made an individual return. If an affiliated company that had no income at all,—had a loss, no tax was assessed against any such company by the Consolidated Company. They only assessed it against the companies that would otherwise have paid a tax, so that the tax which they would have paid if they had been paying separately is thereby reduced. They get the benefit of the losses incurred by any affiliated companies, and also the benefit of any interest or bond interest deducted.

By Mr. Donnelly:

I have not made a study of the income tax return to the Federal Government by the Consolidated Company to find out whether or not the Consolidated Gas Company has charged off any amount for renewals and replacements or for retirements, on its income tax report. I have not any of the details as to whether the company shows its actual losses on property withdrawn from service. The only thing that I have is the copy of the front sheet of the income tax return. I do not see any such item as depreciation shown upon that report. I presume it is in one figure here, but I have not the details of that figure. I presume whatever there is, is included in this item of other expenses, $19,000,000, and I have no details of that $19,000,000.

The amount $707,984.41 shown on page 1-A of Exhibit No. 814 is just what the note states, that there are included in the charges by the affiliated companies against the Con-

solidated Gas Company, the following amounts for taxes, [fol. 1313] the details of which are set forth in Plaintiff's Exhibit 818. I arrived at those items by the analysis of charges occurring on the company's books, and analyzed in conformity with the information furnished by Mr. Woods' Report.

If I were asked whether my detail with reference to the 1923 taxes were made up in the same way as already explained that they were made up with reference to the year 1922, I would answer from the same sources of information in each and every instance of taxes.

I would like to make a correction. I have not seen the minutes but I know that yesterday morning when I was speaking about the charges made by Astoria to the Consolidated Company for gas, and with reference to the item General and Miscellaneous Expenses, I said that it omitted insurance and repairs, but I should have said it omitted insurance and use of distribution system. I just wanted to get that correct upon the record.

[fol. 1314] New York, April 24, 1924.

Met pursuant to adjournment.

David Burney Stokes, called as a witness in behalf of the plaintiff, testified as follows:

Direct examination by Mr. Goetz:

I am General Sales Manager of the United States Cast Iron Pipe & Foundry Company. The company's business is manufacturers of cast iron pipe for water and gas culverts, fittings for the same, sugar house machinery, general foundry products, and it has foundries located in various parts of the country, and does not confine its business to any part of the country. We operate in all parts of the country.

I have been in the cast iron pipe business thirteen years. My experience has been first as a representative of this company in the New England States; second, as Eastern Sales Manager with headquarters at Philadelphia; third,

as Western Sales Manager with headquarters at Chicago, and at present General Sales Manager with headquarters at Philadelphia. Then my duties are supervising the sale of the entire output of our company. I supervise the fixing of prices by our company, and keep informed as to, and know, the prices paid in New York City and other parts of the country for cast iron pipe. That is part of my duties, of course, to keep in touch with market figures in different sections. I accumulate data on pipe prices, and refer to my data from time to time in the course of my work. I know the prevailing market prices on or about June 1st, 1923, for cast iron gas pipe of various sizes delivered in New York City, particularly in the Borough of Manhattan.

There is now and was in June of 1923 a custom and [fol. 1315] practice in our trade of quoting prices for cast iron pipe on the basis of water pipe. There was and is a classification of different sizes of pipe for pricing purposes. There is and was a custom or practice in the trade by which a differential was fixed between the base price of water pipe of a given diameter and the price of gas pipe of the same diameter.

The market price prevailing on or about June 1st, 1923, for cast iron gas pipe of various sizes and diameter, delivered in Manhattan and the Bronx and New York City; six-inch and larger pipe—this is gas pipe delivered—$67.60; that is the base price. For four-inch there is a standard differential of four to five dollars a ton over that figure, that I gave for six-inch. For three-inch there is a differential of ten dollars to eleven dollars a ton, over the figure that I gave for six-inch and larger. Now, the base price that I have given is such as we usually figure on six-inch and larger pipe. However, just at approximately June 1st, 1923, and during several months before and several months thereafter, the market price of six-inch pipe was from $2.00 to $2.50 higher than that figure. It is not correct to say that the prices of pipe are based upon six-inch diameter pipe, but generally speaking we name a base price on six-inch and larger. And the differential is added to the six-inch and larger base price for the prices of smaller diameters, to take care of the difference in the cost of manufacture. The differential between six-inch pipe and three-inch pipe is ap-

proximately $10.00 to $11.00. That differential does not [fol. 1316] apply to the size of pipe less than three inches in diameter; the differential for smaller pipe, that is pipe smaller than three inches, would be considerably more. You see the smaller the pipe the more your labor charges will mount up compared with the amount of iron you actually use, and while we do not make a one-and-one-quarter-inch pipe, in fact two-inch is the lowest size we manufacture, on two-inch pipe the differential over three-inch would be about $10.00 a ton, or in other words the market price on two-inch pipe would be approximately $20.00 a ton over the base figure on six-inch and larger. The price that I quoted, $67.60 was delivered New York. That included freight, from Burlington, New Jersey. That is our nearest foundry, to the New York Market. That would be the rate wherever it was shipped from. I am quoting a figure which represents the market price delivered here in New York.

If these foundries further away wanted to compete with the market price at New York, they would necessarily have to absorb the difference in freight themselves.

There is a distinction between the prices fixed for gas pipe of various diameters and the prices fixed for the kind of pipe used in the gas business which is known as "Fittings" T's, elbows, drip-pots and what-not, connections for the straight pipe. I have been engaged in the selling of specials for gas mains and am familiar with the market prices of specials in New York City, of various kinds and sizes, used in the gas business.

Regarding the market price for specials that are attached to pipes of different sizes, there again the base figure enters [fol. 1317] into the matter. The standard practice is to base the price of fittings on six-inch to 24-inch inclusive. The market price prevailing on or about June 1, 1923, in New York City, standard gas fittings, six-inch to 24-inch, inclusive, is $127.60 by the ton.

All of these prices that I gave were per net ton of 2,000 pounds.

For four-inch fittings there is an addition of the differential of $10 a ton, and for three-inch fittings an additional of $20 a ton. As to the five-inch fittings, that differential will be for four or five-inch, although the five-inch size is

very rarely used. Then for larger fittings, 30-inch to 60-inch, there is an addition of $20 per ton over the base price of fittings six to 24-inch. These prices that I gave for specials or fittings were prices applicable to standard fittings. The standard fittings comprise fittings of a certain type that have been adopted as standard, and we have regular differentials for fittings that are not standard, and are harder to make, and cost more to make than the standard fittings do. Those differentials increase the price over the price I gave.

Cross-examination by Mr. Donnelly:

I know Mr. N. C. Brady. I have no personal knowledge that he is a very large stockholder in the United States Cast Iron Pipe & Foundry Company. I think that since I have been with the Company I met Mr. Brady once.

The base price that we speak of for six-inch and larger [fol. 1318] pipe is ordinarily for water pipe of Class B or heavier weight, which weight is considerably heavier than used by the gas companies, and for the lighter weight pipe used by the gas companies, there is a standard differential of $5 a ton added. In testifying here as to the market price of gas pipe I included that $5 a ton. As of June 1, 1923 the price of six-inch and larger Class B water pipe was $5 a ton less than the figure I have given here, or $62.50 delivered New York—with the same exception noted as to six-inch pipe alone, which was from $2 to $3 a ton higher.

I testified for the plaintiff in Brooklyn Union Gas Company rate litigation recently, before the Special Master. All foundries had a good deal, not only of six-inch gas pipe but all pipe, to make, as of June 1, 1923. That was particularly true of six-inch pipe on June 1, 1923, but not six-inch gas pipe particularly. I speak of a premium on the price of six-inch gas pipe, as of June 1, 1923, between $2 and $3 a ton. It is a fact that a premium was put upon the price of that pipe partially because of the particularly heavy demand. It is just like any other commodity. If you are selling and you have a heavy demand for it, there is no question but what you can get a little more money for it. These prices that I have testified to here are what I consider the market price that prevailed as of June 1, 1923.

By market prices I mean that a market price is built up by a figure that a purchaser is willing to pay and the seller is willing to sell at. And we found purchasers perfectly [fol. 1319] willing to pay that price; we found that we were able to sell at that price and secure a great many orders at that price. In our business there is a great number of open lettings, public lettings by municipalities, where different foundries bid prices. So that it is relatively easy to follow the prices that your competitors are bidding, and of course that enters into what I consider the market figure to be, you see. There are a number of factors in —, that all go together to make up what I say is the market price. On June 1, 1923 our foundry was comfortably fixed up with orders for six-inch pipe and the demand for pipe of that diameter was quite heavy at that time, heavier than it has been in some previous years, we have had many lean years. The price or prices at which we sell pipe to gas companies depend a good deal, upon the desirability of the customer, also upon our experience with the customer as to whether or not he is the kind who is known to make trouble and to make complaints, whether or not he is good pay, etc. and are all factors that I would take into consideration in making up a quotation which I might make to any one. Considering the fact that a customer is good in the sense that he is sure pay—and that we have found from our experience that we get along well with him and that he is not prone to make trouble and to make complaints, etc.—also considering what we take as the market price, rather than make a concession of any moment, if those conditions did not apply and the customer were poor pay and was kicking all the time, and we had previous trouble with him, we would add something to our figure, but, each individual quotation would have to stand [fol. 1320] by itself. We could not generalize. The moving cause that would induce us to quote a certain price to him, for pipe, is based on the cost of raw material, the cost of manufacture, and a reasonable profit, a variation of some—well, as I say, it is hard to state in general. It would depend upon the particular quotation. Any variation that you might make from what I have said I figure the market price to be, would depend on innumerable conditions and you could not generalize on it. You would

have to consider each individual quotation by itself. One customer might want some material that we had in stock and that we wanted to move, and he might be poor pay but we might be able to tie him up and make him a price that would move that stuff. On the other hand, another customer might be good pay, etc., and so on, and yet want a delivery that made it absolutely impossible for us to make it. That premium is not entirely put on in those instances where we do not desire the customers' trade either because we are not equipped to handle it or for some other reasons. On an average over a term of years it is true that in our business the prices for pipe are somewhat lower in the winter than during the spring and summer. If you will note the prices of pig iron over a corresponding period of years, you will find that on an average they are lower in the fall and winter than they are in the summer and the trend of cast iron prices and pig iron prices follow—the curve, rather, follows very closely. I do not know as there is any definite time since the practice to charge a premium on pipe prices it seems to me that it is [fol. 1321] only good business judgment to get as much money as you can for your product. It would depend altogether on the conditions surrounding the sale of any commodity whether you can get a premium or not for it, whether you can get more money for it than you know to be the prevailing market figure. In general I should say that you ought to sell your commodity for as high a price as you can get, if you are going to make money for your company. That is merely business. That does not apply only to the cast iron pipe industry. That applies to any kind of business that you want to go into. The fellow who does not get as much for his product as he can is crazy, or something. That premium existed on June 1, 1923. I could not say whether it is in existence or not, in general. We are getting orders now for six-inch pipe. Whether we would put premiums on the price it depends on the conditions of the order, it is awfully hard to generalize on this question and it depends upon lots of conditions. We might add a premium on one customer—and might not on another. As to how long the differential on six-inch pipe been in existence, we call our base price six-inch and larger. Then the differentials are for four-inch,

three-inch and so forth and the reference to a pipe of a diameter smaller than six-inch we have the differentials. They have certainly been in existence always. There was always a differential for smaller pipe. The amount of the differential per ton has changed from time to time depending on labor conditions and costs of producing the smaller pipe as compared with six-inch and larger.

[fol. 1322] There is a differential between Class B water pipe and gas pipe of $5.00 a ton at one time. That has been in existence since April 1, 1923. And prior to April 1st, or about April 1, 1923, it was four dollars a ton. Now the $5.00 differential continues today. Six-inch Class B pipe weighs 400 pounds per 12-foot length. Six-inch standard gas pipe weighs 363 pounds per 12-foot length. These are the catalog weights, subject to usual allowed variation in weight which is given under the specifications. Now, it requires exactly as much labor to prepare to make a six-inch pipe, whether it weighs 400 pounds after it is cast, or 363 pounds, and your labor cost there in one case is spread over 363 pounds of iron and in the other case over 400 pounds of iron. That is one reason for the differential. You get down to the thinner pipe, which is the 363-pound pipe, and you use a lot more of it through faulty manufacture. In general, too, the pipe that we make, 363 pounds, is inspected very carefully by all these gas companies; whereas, on six-inch water pipe we run it right along. If we ever want to run stock, we say to the foundry, "Make six-inch water pipe," because we sell it to a lot of these little hamlets, where in many instances, they do not have a gas company. They just simply send in an order for a car of six-inch Class B pipe.

As to what range before and after June 1st had those prices I have given as market prices prevailed, I can speak from memory after June 1st. Until about somewhere between November 1st and November 15th, those same figures prevailed. A great many of the Gas Companies in the City [fol. 1323] of New York contract in the fall of the year and there are also a lot of them who do not, but I would say that they endeavor to take advantage of purchasing their material at a time which they think is propitious and that, as I have previously explained, on an average has been during the winter, when the prices are lower. Of course

that does not mean that that is the only purchase they make, because we are selling the gas companies all through the year. All the gas companies operating in this vicinity buy from time to time during the year from us or from other manufacturers, from whoever may offer them the best proposition. I believe, October 15th to November 15th, somewhere in there, when there was a reduction in the price of pig iron and somewhat of a reduction in price of pipe, we were selling gas pipe of various diameters to gas companies operating in the City of New York.

We sold gas pipe to gas companies operating in the City of New York on or about June 1, 1923 and we are selling them right along from time to time. It is impossible for me to remember to whom, on or about June 1, 1923—or rather, to what gas companies operating in the City of New York we did sell pipe. We have no data here from which I can refresh my recollection. I have no data with me of any sales I made to any gas companies operating in the City of New York as of June 1, 1923, or on or about that date. I have nothing with me from which I can testify as to any sales of pipe made by our company to the gas companies operating in the City of New York for the period [fol. 1324] April 1, 1923, to June 1, 1923. Or for the period April 1, 1923, running back to November and December, 1922, and have no independent recollection of the prices at which I sold to the specific gas companies on the dates mentioned.

We made some sales on or about June 1, 1923, on the basis of the prices of the various diameters of pipe that I gave, and I should say that while I considered that is the market figure, they would be, if they were applied to our sales over that period—June 1, 1923, they would check very closely with it. I do not know that these sales included sales to the plaintiff, they include sales to other gas companies than the companies operating in the City of New York. I could not testify exactly as to whether they include sales to other gas companies than the companies operating in the City of New York, but I should say yes. That is my opinion that they would. I do not know. I could not say how large a quantity our audits called for as of June 1st, 1923, or thereabouts. I cannot carry a lot of details in my head about our business. That information is of record, and I can

readily obtain it by simply telephoning to our comptroller or statistician, but it is impossible—I could not carry anything like that in my head. The capacity of our plants can vary very much. You may have to reckon double time, or the plants may be closed down.

By the Master:

The price that I gave here is what, in my judgment and from my knowledge and experience, I considered the market price for this pipe at that time, selling by us and other people in the regular course of business.

[fol. 1325] Nicholas Engel, called as a witness on behalf of the plaintiff, testified as follows:

Direct examination by Mr. Goetz:

I am the proprietor of the firm of John Fox & Company, 233 Broadway, New York City. We are sales agents for the Donaldson Iron Company of Emaus, Pennsylvania, manufacturers of cast iron pipe and special castings. I have been in the cast iron pipe business since 1883. I was engaged in the sale of cast iron before and during 1923 and since then. The Donaldson Company manufactures its own cast iron pipe. I have kept myself informed as to, and I know, the prevailing market price in New York City for cast iron pipe for a number of years. I know the prevailing market price on or about June 1, 1923, for cast iron gas pipe of various sizes delivered in Manhattan and the Bronx in New York City. There was, on or about June 1, 1923, a custom and practice in our trade of scaling prices for cast iron pipe on the basis of water pipe, and there was also a classification of different sizes of pipe for pricing purposes. There was a custom in the trade by which a differential is fixed between the base price of water pipe of a given diameter and the price of gas pipe of a similar diameter. The market price prevailing on or about June 1, 1923, for six-inch gas and larger sizes of pipe of various sizes delivered in Manhattan and the Bronx, New York City, was $70.70 per net ton of 2,000 pounds, delivered in New York, from Emaus, Pennsylvania. Four-inch, $5.00 per ton

higher and three-inch, $10 per ton higher than four-inch. There is still a higher differential between six inch pipe and pipe of diameter less than three-inch.

[fol. 1326] The market price of pipe of eight-inch was the the same as six-inch. That was $70.70. That price $70.70 applies up to sizes 14 inch, inclusive. 16 inch and larger sized, up to 36-inch, which is the largest our foundry turns out, it would be a dollar a ton less. That would be $69.70. The prices are f. o. b. cars or dock New York City. My recollection is I said the price of three-inch pipe was $10 per ton higher than the four-inch, which makes it $15 per ton higher than the six-inch. In other words, that would make the price of three-inch pipe $85.70. Those were the prices which generally prevailed in the market here at that time, according to our records. We were competing with other pipe foundries for the sale of pipe in New York and vicinity, and, in giving judgment of the market prices prevailing on June 1, 1923, I took into consideration all the conditions with which I was acquainted and in which I had experience in this market.

Cross-examination by Mr. Donnelly:

Mr. Stokes who preceded me on the witness stand I have met probably three or four times. I was in court while he testified. I testified as a witness for the plaintiff in the case of the Brooklyn Union Gas Company, now being tried. I have kept myself informed for a number of years on prices. The prices of gas pipe which I have named are based as far as we are concerned, upon actual sales had at the period June 1, 1923. One of the sales was during the month of [fol. 1327] May and the other one in the month of August, 1923, to gas companies in the Metropolitan District to the Kings County Lighting Company and the Brooklyn Borough Company, of a number of car-loads. The diameter was six-inch gas pipe. The demand for six-inch gas pipe in or about June 1923 was very heavy, whether gas or water, and those prices include any premiums. The freight rate from Emaus, Pennsylvania, to New York is $2.70 a net ton. That is more than ten cents per net ton higher than the freight rate from Burlington to New York. That being $2.60. We did not have any sales to any other gas

companies operating in the City of New York in these months. The prices that I gave were based upon the prices at which the pipe was sold to those gas companies and also on the price at which we were selling water pipe during that same period. We were selling water pipe to a great many all around in the Metropolitan District. I will have to refer to a memorandum that I have to find out to whom the individuals or corporations the water pipe was sold in May or August, 1923.

The difference between the water pipe and the gas pipe is: six-inch water pipe $6.00 per ton less than six-inch gas pipe. We sold material to the Standard Oil Company and various contractors here in New York City—a number of individuals. Our books will show who those people are. We did not have any sales of gas pipe to any other gas companies than the Kings County Lighting Company and the Brooklyn Borough Gas Company in May and August, 1923. We sold some for a period, say, of six months prior [fol. 1328] to May, 1923, to the Queens Borough Gas & Electric Company, Far Rockaway, in the early part of 1922. As a rule the gas companies operating in the City of New York as for bids to place their contracts for the requirements of the ensuing year in the fall of the year. The prices of pipe are lower in the winter than they are in the spring or summer. That was the custom or was the condition in former years, but it does not obtain so much now and has not obtained for quite a period now; because a great many customers I suppose expecting that they could get more favorable prices at that time of the year, placed their orders at that time, and there have been so many orders placed at that season it does not make much difference. I am speaking of the experience of our own company. From May until October was the period during which these figures were the market prices as of June 1st. Prior to May, 1923, and running back to November and December, the price of gas pipe delivered in New York was lower than it was in May and August, 1923. We had no other companies to whom we sold except the Queens Borough Gas & Electric Company that I recall. Our books show what the water companies are.

Speaking of my experience, the fact that one of the factors that determines the price at which pipe is sold is the

reliability of the customers and the fact that I have learned from my experience that he is a good customer, who is not apt to give trouble, is taken into consideration, but the [fol. 1329] prices that we quote would depend upon the general foundry conditions. There might be times when the most desirable customer would present a specification to us for a certain size of pipe and the foundry condition would be such that we are filled up with orders for that size and could not handle it. We might decline to bid or we might name a price that would be prohibitive. That applies, however, to the condition that I have just described, namely, that we were so filled up with orders that we could not afford to undertake any immediate new business. That is a condition in other words, that we find to exist in our business. On occasions, it is not a fact that generally speaking we have one price for one customer as compared with another. If we had from two equally desirable customers a specification that would call for material that we were anxious to take an order for at that time, we would quote them both the same if we were anxious to get the order. If it should happen that we were in a condition that we did not care and could not handle an order at that time, why, we would name them each a higher price. We sold to the Consolidated Gas Company some special castings probably within a month. Those special castings come separate as I understand. I could not recall when the last sale was to the Consolidated Gas Company. I don't think it was within the last year.

By the Master:

As to differences in price, if the order was a very desirable one we would probably make a concession below the market price in order to get the business. This price that I have given was the price at which we actually made sales [fol. 1330] at that time. We made sales at that price, but irrespective of what we got, I so considered, was the general market price in this territory on or about June 1st. Taking up the last question that was put to me by the Master viz:

"Q. Based on what other companies were selling and quoting at, as indicated in bids and other opportunities that we had to find out what the prices were?

"A. Yes, sir,"

and my answer, I remember that I was asked this question and made this answer in my testimony in the Brooklyn Gas Company case, where I was asked there if I knew what companies other than our own company were charging, and I answered that I did not; I did not know what they were quoting other gas companies.

I was asked these questions and made these answers in my testimony in the Brooklyn Gas Company case before the Special Master:

"Q. Now, your market price was higher than the United States Cast Iron Pipe prices, wasn't it, on June 1st? The June 1st I think it will be admitted referred to 1923.

"A. That is the price at which we actually booked orders."

"Q. Well you knew their price, didn't you?

"A. Only in a general way."

"Q. Did you know what they were charging?

"A. No, sir."

"Q. Don't you keep track of their sales?

"A. No, sir."

I was asked those questions and did make those answers.

I do not know how the prices at which we sold the Kings County Lighting Company and the Brooklyn Borough Gas Company in May & August, 1923, compared with sales of [fol. 1331] gas pipe that the United States Cast Iron Pipe & Foundry Company were making at that time. My recollection is I said the prices prevailed until October, 1923. As far as we are concerned the prices of pipe which existed in May, 1923, continued at the same prices until, October, 1923. In other words we are confining ourselves to the experience of our own company, and to the general market conditions. People in the same line of business keep generally informed of the prices at which their competitors are selling the goods, in order to meet them. They must do that. They get the information and they know what the prices are; and in the case of pipe, that apparently also has a relation to the fluctuating prices of pig iron. A man who says he know- the market price must know something more than merely the price at which he is making and selling his pipe. I mean by general market conditions that those prices prevailed until October, 1923, with the United

States Cast Iron Pipe & Foundry Company. Speaking of general market conditions, there was no reduction in the price of pipe between May, 1923 and October, 1923.

Redirect examination by Mr. Goetz:

In a general way I am familiar with the fact that other pipe foundries than our own were quoting a premium of $2 on the base price of six-inch pipe in June, 1923. In addition to the factor of the price of pig iron entering into the price of pipe it is also the fact that the rates of pay of [fol. 1332] labor are an important factor in the price of pipe.

William T. Rasch, called as a witness on behalf of the plaintiff, testified as follows:

It was stipulated and agreed that the testimony of William T. Rasch, who was called as a witness in behalf of the plaintiff in the case of New York and Queens Gas Company v. Prendergast, and in the case of Bronx Gas & Electric Company v. Prendergast, pending in this Court, be read into the record in this case, as follows:

I am the Engineer of Utilization of the Consolidated Gas Company, and its affiliated companies, and have been since 1919. After leaving high school I entered the employ of the Consolidated Gas Company, in 1906, in the Department of Mains and Services. I worked there until 1910. During this time I became Assistant Engineer of that Department and worked on mains and services, their installation, and was responsible for the work incidental thereto. I supervised the installation of mains and services. From then I [fol. 1333] did some valuation work which engaged my time for about two years. Then the Department of Utilization was organized, and I was made the Assistant Engineer of Utilization. That was in 1912. And since then I have been its Engineer. From 1912 to 1919 I was Assistant Engineer, and from 1919 until the present date its engineer and I hold an authorization from the New York State Board of Regents to practice engineering. I am a member of the American Gas Association, the Illuminating Engineering Society, and the Society of Gas Engineers of New York

City. I am also Chairman of the Standardization Committee of the American Gas Association. That is standardization of gas appliances. The duty of that Committee is to write specifications for the safe and efficient design and construction of various gas consuming appliances.

[fol. 1334] The Chief Engineer, Mr. George E. Woods, to whom I always report is my superior officer. I consult at various times with the executive officers of the Consolidated and the affiliated companies, including the New York and Queens.

The principal duty of the Department of Utilization is to test gas appliances and to make sure that they are safe and efficient, and that the company, the Consolidated and its affiliated companies, only sell those appliances which have been passed by the department as being safe and efficient. Besides that, and naturally so, the Department is called upon to do a great deal of district work in connection with its laboratory work. Fifty percent of our time is devoted to district work. There are thirty employees in the department, about eight of which are graduate engineers, including mechanical and chemical engineers. We do a great deal of designing work in relation to gas appliances. My department has the largest laboratories in the United States; it has the finest equipment of any laboratory. The testing of gas appliances for their safe and efficient use on the district, is the principal work done in the laboratory. In the course of my duties I also visit and inspect the plants where appliances are manufactured.

I am familiar with the various kinds of appliances for the use of gas in the City of New York, including those used in the territory of the New York and Queens Gas Company. I am familiar with the territory of that company. I make inspections of gas appliances actually on the consumers' premises in the New York and Queens Gas Company's territory; the New York and Queens Company uses the same type of appliances as the other companies of the Consolidated System. I make recommendations to Mr. Spear as to the types to be used. If there are some particular complaints about an appliance and that becomes [fol. 1335] in any way general, that is always referred to me and I myself or one of my engineers make a thorough inspection of that condition in that particular territory, in

order that that particular condition might be corrected. In such investigations I sometimes bring the appliances to my laboratory for tests there. In my visits to the territory of the plaintiff company, I get into the rooms of consumers and observe the working conditions there. I made a periodic inspection of the appliance shop of the New York and Queens Gas Company to determine whether the appliances that have been received are as specified by my department and to see that the appliances that go out, go in proper shape. I examine the appliances that are on the floor in the appliance shop. I always receive reports of any conditions from my staff of engineers.

Gas ranges, gas water heaters, gas irons, various kinds of domestic gas appliances such as toasters, various kinds of industrial appliances such as boilers and various—furnaces and various kinds of heating appliances, such as gas-fired steam radiators and radiantfire heaters, and also lighting appliances, both mantle and open flame burners, are the various types of gas appliances used in the territory of the New York & Queens Company. The majority of those appliances are equipped with the blue-flame burner, that is what is called the Bunsen burner.

I did work for the Consolidated Gas Company and its affiliated companies in connection with the readjustment of gas appliances to adapt them to the use of gas of a B. t. u. standard. I first made an inspection of four or five cities that had already changed from a candle-power standard to a B. t. u. standard. Then I got a number of appliances that [fol. 1336] were actually operating on the district, in the Consolidated territory and the New York and Queens Gas Company territory, and made gases of various B. t. u. values. That was done in the laboratory. I brought same appliances from the New York and Queens territory and from other companies' territory. After a number of experiments in the laboratory, we determined that with the appliances as operating on the Consolidated and New York and Queens territory they could only be operated at a value of about 600 B. t. u.'s. That is, the appliances as they came in from plaintiff's territory. With the same appliances we used gases in steps of 20 B t. u.'s. from 600 down to 500, and we determined through those tests that anything below 600

was dangerous to use. The appliances would have flashed back, what was known as flash-back.

After I had ascertained that you could not get below 600 or thereabouts with the appliances as then in use, the next thing that was done was to get together or employ a corps of men, and they were divided into chief supervisors, supervisors and gas supply inspectors. I personally instructed the chief supervisors in the proper method of adjustment appliances to take care of the gas of approximate 550 B. t. u.'s. With the same appliances that were taken from the district we determined that there would have to be adjustments made to the appliances, of the air shutters in some cases, of the orifice in other cases, and in some other cases of both the air and gas, depending upon the appliance. In some cases we found it necessary to clean the orifice and in [fol. 1337] other cases to ream them. By reaming is meant to slightly open the orifice, by taking a reamer and gouging it out, drilling it out. We adjusted the appliances that we brought in from the district to approximately 550 B. t. u.'s. That means a soft flame, a flame that is just off the tinge of yellow. 400 men were organized to do this work. Between five and six months was occupied in doing the work as to the New York and Queens Company. In the New York and Queens Company I made numerous inspections; I would either make an inspection with the chief supervisor, with the supervisor, and in many cases go with the gas supply inspector himself—would go in with him to the consumers' home and watch him make these adjustments.

In the experiments which I testified I conducted at my laboratory with various gas appliances, I tested the quality of the gas which was used in our experiment. I tested and recorded to test as to the B. t. u. contents. Before—October 1, 1922, gas appliances generally were adjusted in the territory served by the companies of the Consolidated System including the New York and Queens to the standard of the gas that was being supplied at that time—I mean 22 candle power. The B. t. u. of such gas is very variable, under the candle power standard. The burners had to be so adjusted so as to allow a very flexible adjustment. Flexible in this way, that when you have a gas that is very variable in B. t. u.'s, it necessarily can not be a very close adjustment. By a close adjustment I mean, a very fine adjustment or the

most efficient adjustment. That is really the answer, the most efficient adjustment. It was not possible to adjust for [fol. 1338] an economical or efficient use of gas. At times under the 22 candle power standard the B. T. U. value or content of the gas was as high as 650 and at other times was a great deal lower, down as far as 620 and even 615. That was in thousands of tests that were made during that time. Before I began the readjustment of the appliances in connection with the change to a B. T. U. basis, I found that the appliances in the New York and Queens territory could not operate on anything less than 600 B. T. U.'s. without adjustment. Thereafter we adjusted the appliances on the plaintiff's territory. After October 1, 1922 the appliances were adjusted approximately to 550 B. T. U.'s to approximately 600 B. T. U.'s.

Since the readjustment of the appliances, I have conducted experiments to determine their adaptibility and operating characteristics for the use of gas of 600 to 550 B. T. U.'s or thereabouts, and of gas of not less than 650 B. T. [fol. 1339] U.'s. These appliances were taken from the New York and Queens Company's territory, brought into our laboratory and gases of various B. T. U. values were again made. They went from 690 up to 700 B. T. U.'s. We found that when we used gases of over 650 B. T. U.'s that—we very carefully analyzed when using gases of not less than 650 B. T. U.'s—we very carefuly analyzed the four products, the products of combustion, to determine whether there was any so given off when the appliances were operated. By C. O. I mean carbon monoxide. This was determined by a special apparatus known as the iodine pantoxide machine, of which there are only four in existence today, and this was built for us by the Bureau of Standards of the Federal Government. It is the only machine we know of that detects carbon monoxide in very small quantities. The standard machines, such as the Elliot and Orsat do not detect quantities as small as not to be harmful. We found in each case that when the higher B. T. U. values were used carbon monoxide was given off, all the way from 2/10 of 1 per cent to as high as 4 and 5 per cent. These same appli- [fol. 1340] ances were tested on the gas as delivered today, and there was absolutely no C. O. given off under those conditions, showing that the appliances were operating satis-

factorily on the district. Carbon monoxide gas is a toxic gas which is very poisonous and given off in very small quantities is very deleterious to health. We used gas of 600 to 700 B. T. U.'s for the purpose of these experiments, because we know that if you have to deliver gas around 650 B. T. U.'s it is absolutely necessary at some times to go away above that amount or that thermal content of the gas, and it is certainly the maximum condition that we had to take care of, or that we wanted to know something about.

The result in my judgment of an attempt to use on the appliances adjusted by me under my direction gas over any substantial period of time or more than approximately 600 B. T. U.'s would result in a dangerous condition. That is without an adjustment of the appliance. We would render, also, very poor service and the appliance would also operate very inefficiently. If we undertook to use gas of more than approximately 600 B. T. U.'s in the present appliances, over any substantial period of time, all appliances, or practically all appliances have to be adjusted by closing, in some cases, the orifices or making the orifices smaller, increasing the air by the air shutter or in some cases both would have to be done. Quite a quantity of the appliances would have to be rebuilt. At least eight months—at least ten months' time would be required to adjust appliances to a higher B. T. U. standard. That is for the entire territory of the Consolidated System. We would have to increase our force to [fol. 1341] 600. Under Mr. Woods I had charge of an- was familiar with the rates that were paid and the work that was done on adjustment. I saw the payrolls and vouchers with relation to that work. It would cost very much more to readjust these appliances to a standard of not less than 650 B. T. U.'s, because it is an economical and much more difficult operation to adjust from a lower to a higher B. T. U. content. It is easy enough to re-open an orifice but it is very hard to close up an orifice. Also many of our appliances have fixed orifices made of cast iron, which cannot be reduced in their size; also many of them have no shutters at all and no adjustment can be made in that respect. Some of them have no orifice fixture at all. In that case making an orifice hole smaller, you would have to put in a new orifice, if that were possible, and in some cases that would

be impossible, that would mean as to the future use of the appliance. We would have to buy a new appliance.

In my judgment it was not possible for the plaintiff upon the enactment, on June 2, 1923, of Chapter 899 of the laws of 1923, to adjust the appliances of its 13,000 gas consumers in order to make them forthwith suitable and safe for the use of gas of not less than 650 B. T. U.'s. It would not be practicable to adjust the gas, on part of our territory for gas of 650 B. T. U.'s and, for consumers near our plant and works, of 670, 680 or 690, efficiently.

Under the assumption made in the question asked me, viz:

"Q. But how would you determine what adjustment had to be made for a particular —, or how would you control the adjustment made on appliances, for example, sold by a department store, which might not know the district in which the appliance was going to be used,"

[fol. 1342] it would be necessary for the plaintiff, in the sales of appliances, to try to ascertain the part of this territory in which each appliance was sold, so it could adjust that particular appliance accordingly; that is a thing we have no control over whatever, and that is a danger that would exist. The appliances as at present adjusted can take a B. T. U. of varying content, they can go down to safely 550, and up to approximately 600. It isn't possible to adjust it at various points where they would take—so that the B. T. U.'s might turn from a still higher B. T. U. content down to one above 600, those within a mile, we will say, were adjusted to a 660 and 670 B. T. U. content and those further off were adjusted to 600 and 650 B. T. U. content, in the same territory. It would not be practicable to undertake to sell consumers of a given company appliances for the safe use of gas of substantially varying B. T. U.'s when they are substantially varying, that would be very difficult. We could not undertake to sell some consumers appliances adjusted for 630 B. T. U.'s and to others appliances adjusted for 530 B. T. U.'s, that would be absolutely impracticable, because you would have to make two separate adjustments and you would not know how to make them or where to make them. We could not have a saleswoman in our stores when a consumer came in to buy a range

or appliance, undertake to determine what the adjustments should be in a particular neighborhood.

[fol. 1343] The hazards of 650 B. t. u. gas or more arise from trying to supply to the burner a gas of a calorific value for which it is not properly adjusted, thereby causing a yellow flame to appear on the top of the gas and which, if a vessel should be put over the said burner, would deposit carbon and carbon monoxide given off. Supposing we have got an appliance and undertake to use in it gas of a lower B. t. u. content than the appliance is adjusted for; that would result in a flash-back to the burners, which, however, is not nearly so dangerous, because that is usually audible. You know when that happens, and, in the majority of cases, the flame is taken off the burner itself. In the other case, however, you have no way of telling that, because, in many cases, for instance, in the case of the radiantfire, you cannot see that the fire is giving off carbon monoxide, as carbon monoxide is a tasteless and odorless gas. Sometimes you can smell the acetylene, but it would be unknown to the majority of consumers. When you are using in an appliance a gas of higher B. t. u. content than the appliance is adjusted for, there is a hazard from incomplete combustion. There is not a visual or audible warning of that. You know of the hazard from that cause, after you get very sick or die.

The manufacturers of gas appliances make their appliances to operate efficiently at between 500 and 550 B. t. u.'s. It would be a very difficult matter to get specially designed appliances for a single city. All of the appliances which are made and commonly sold are appliances designed for the lower standards.

[fol. 1344] Cross-examination by Mr. Blakeslee:

Appliances now in the territory of the New York and Queens Gas Company are adjusted now to between 550 and 600 B. t. u.'s. I should say they could go about five B. t. u.'s lower, in my judgment, with safety. That is 545. I should say they could go with safety to 610; that is not on continued use, however. In continued use it was unsafe to go over 610. In the occasional use 610 would be the top mark of safety, in my opinion, anything above that would be unsafe, and in my opinion dangerous to life and health.

I would say that the send-out, if such a fact existed, of 620 B. t. u. gas was unsafe and dangerous. Why, I might have known what the B. t. u. content of the gas sent out by the New York and Queen Gas Company in the month of July of this year was—but I do not know it now. The limits of safety are about 65 B. t. u.'s. Our present appliances are adjusted to a range of about 65 B. t. u.'s.

Under the 22-candle power standard, so far as the B. t. u. content was concerned, in the territory of the New York and Queens Gas Company, we were furnishing from 650 to 620 approximately. I do not know how much above 650 it would go. The adjustments that were made are calculated to take gas which varies in B. t. u. content 56 B. t. u.'s, but not with the most efficient operation. We can do that without any danger. The B. t. u. content of the gas now being furnished to the consumers of the New York and Queens Gas Company, I do not know exactly—that is, I have not those records with me. I know it is some place between 585 to 590.

[fol. 1345] With the present adjustment of appliances over there, it is safe for them to use gas of 560 B. t. u.'s. It is not safe for them to use gas of 620 B. t. u.'s. In case gase of 620 B. t. u.'s or 650 B. t. u.'s was supplies, it would be necessary to make adjustments of the appliances.

I stated that I frequently make inspections of complaints in the territory of the New York and Queens Gas Company. I do not know how many of these I have made in the last three months. I would say one or two a week. I have, on a number of occasions, personally gone over to their territory to make these inspections. Within the last three months I have done that about three times. I have made about three inspections of appliances in that territory in the last three months, outside of these complaints. My knowledge of appliances of the New York and Queens Gas Company within the past three months is not confined to the six inspections. My men have made inspections and have reported to me, that is personal knowledge, when it is reported to me. I have seen the report as the condition then existed on the district. All of my answers to Judge Ransom's questions regarding my inspections and my familiarity with the appliances over there based on those records—

those reports made to me on my personal inspections and knowledge. I haven't a record how many personal inspections I have made in the last six months. I don't know. I would say at least twenty-five. A great many within the last nine months, because that was the time during the gas appliance inspection, if I am right as to that—about within the last nine months.

[fol. 1346] During the period of the gas appliance inspection, I was in the territory of the New York and Queens Gas Company personally, at least once a week. I probably looked at four or five on an inspection. I was there once a week, this lasted about six months. That started as I remember it October 1st, and wound up about April. That is, I was there approximately once a week for six months, and I saw about four appliances each time. That would be about ninety-six appliances I looked at personally. I haven't the record of how many men were working under me. I know that my men made inspections of every appliance in the territory of the New York and Queens Gas Company, as I stated on direct examination, because I received the reports from the supervisor. That is the basis of my knowledge on that. I investigated B. t. u. standards in, Philadelphia, Baltimore, Providence, and the Brooklyn Borough Gas Company in Coney Island. I went to Baltimore, Providence, Philadelphia and to Coney Island. I brought to my laboratory to test six or seven appliances. They were gas iron, gas water heater, gas range, automatic instantaneous water heater radiantfire—two types of radiantfire, and mantle burners. I got the mantle burners from the district. I do not know from what consumer. I do not know where the gas water heaters came from. They came into the shop of the New York and Queens Gas Company. I had them brought to the laboratory. They were in use on consumers' premises. They were not sent back to the consumers' premises after we were through with them. I do not know whose premises [fol. 1347] we did get the gas iron from. I haven't that record. Now we got all these appliances from the territory of the New York and Queens Gas Company. I think I have the records which show where these all came from.

Our present adjustment of appliances in the territory, is from approximately 550 B. t. u.'s to approximately 605 B. t. u.'s. We could use it as 545 with safety and up to

610 with safety, that was not continuously, however. We use it continuously about 605, and as low as about 545, that was continuously, and that would give 50 B. t. u.'s variations. The soft flame is not economical to the consumer as a flame adjusted correctly to the B. t. u. content furnished. It isn't a fact that our Company is furnishing over there gas of about 650 B. t. u.'s. I haven't that record right now. When we made these adjustments it was necessary for you to know the gas furnished. At that time it was approximately 600, and we adjusted it so that they could use up to 605 without danger, above that it would be dangerous. If the New York and Queens Gas Company made gas and sent it out so that it was used by the consumers containing more than 605 B. t. u.'s it would be dangerous burned continuously. When they are making gas of 600 B. t. u. content the variation would probably run from 590 to 600 or 605, it would not run over that on the district. We adjusted for 550 to 600 for a soft flame. The lower the B. t. u. content the flame becomes harder. I knew at that time that the Company was sending out gas to consumers of about [fol. 1348] 600 B. t. u.'s. I don't remember New York and Queens Gas Company in making these adjustments. I did see the pay rolls personally. I did not see the pay rolls of the New York & Queens Gas Company. I saw the record of the amount of the New York and Queens Gas Company gas. I don't remember how many were employed there. At a rough guess, about thirty-five or forty. I think there were about twenty per cent employed by that company. These men get in cages from $3.75 to $4.50 a day. Not all of those men employed in the territory of the New York and Queens Company were employed continuously. If I am right in my figure of 20, I should say about 15 or 16 men were employed continuously. I cannot remember how many were employed. I would say there were at least 16 employed approximately six months; the entire 16 worked all the time for six months, to the best of my knowledge. I was in actual charge of it. It has been some time ago. I have no records to that effect. I did not say that my records show that, because I do not remember what my records do show now. That is my best judgment, those men were employed in making these adjustments of apparatus and appliances, and nothing else. They were part of our force. I don't know how many appliances in that

territory I adjusted personally. There was 13,000—about 13,000 consumers. I certainly haven't got the record of the number they adjusted. I adjusted the appliances of 13,000 consumers I surely cannot say how many appliances there are in the territory. I know that they were all adjusted, because my organization was so complete as to make [fol. 1349] it sure that there was no slip up and every appliance was adjusted, every appliance had to be adjusted. That is the basis of my statement that they were all adjusted, because our organization was complete. I surely did not see all of the appliances myself. That is the limit of my knowledge, the reports made to me, and that is the limit of my knowledge, the reports made to me by our men. The reports made to me by our men and the 24 times I visited the territory of this company is the limit of my knowledge.

Flash-back in itself is dangerous because that is what is known as arrested combustion, and enough air can not get to that flame to completely burn it, therefore carbon monoxide is given off. That is, as a matter of fact, one of the worst forms of giving off carbon monoxide, because it is tasteless and odorless and cannot be detected. The flash-back does make a noise and can be detected. When I made this test, the B. t. u. content of the gas we were using was around 592, 593 and 594, approximately; we will say approximately 595. We were using two or three different kinds of water heaters, gas irons, gas ranges, both the cabinet and junior type, and two types of radiantfires water heaters. Those appliances were from the territory of the New York and Queens. They had been adjusted by our force and we used gas of approximately 595. It did not give off carbon monoxide. In the gas irons it starts at about 660 or 665, I think; that would be hard to get the [fol. 1350] exact point. That would be 665 at the consumer's gas iron, that is on the district adjusted as they are in the territory of the New York and Queens now. Consumer's gas range there was a smaller percentage of CO given off, and that did not start until around 680 or 690, on the district, and we were using appliances adjusted as they are now on the territory of the New York and Queens. Water heaters were almost the same as gas irons except they did not give off as large a percentage of

carbon monoxide as the gas iron did, they began to give off carbon monoxide, the same as a gas iron, which is 650, 655 or 660, but not in the same percentage. That is, the gas iron gave off more than the water heater and it has to get 660 before it becomes dangerous, with appliances as adjusted now on the consumers' premises in the New York and Queens territory, all of this is for momentary use; that if you use values higher than 600 for continued use, it becomes dangerous; it would eventually become monoxide because you deposit carbon, and finally we would have an entirely different operating appliance, which would eventually produce carbon monoxide. It must be remembered that these tests I am referring to are tests that were made with good clean appliances, and there was no cumulative effect there. We continued to send gas through these appliances we were using, for a very short periods because we had to make up this gas and I think our two test holders only hold about 75 feet apiece, so we could not do that for any long period of time. If the burners of the gas stove [fol. 1351] were cleaned every day that would make a difference. Then it would not be dangerous, not down as low as 605 to 610, it would not, if the burner was cleaned every day. They could not use up to 650 or 680 then without danger because that would go too far. It would be possible to readjust the appliances in the territory of the New York and Queens to use 650 B. t. u. gas. Waterman's gas stove in use in the territory of the New York and Queens has no means of being adjusted. I haven't any idea how many of those stoves are being used in that territory. I do know they use them there; quite a quantity of those types of range. Hot plates are the worse offenders there. Waterman gas stove is what we would call a gas cooker. It is not a little gas appliance, it is a gas cooker, it has an oven and top burners. There are quite a quantity used in the territory of *the* New York and Queens. Waterman's gas stoves have no possible means of being adjusted. Our records show how many of these there were. They cost say around $15; from $10 to $15. I do not think they are being manufactured now, though I am not sure about that. They were not approved by our department. They were not sold by our company; they were sold by dealers. They were sold and put in that territory years ago, I imagine, maybe

three, four or five years ago. They belong to consumers. I do not know just exactly who that was who picked up and collected these appliances from the territory of the New York and Queens that we took for our tests. Those were gotten as they came into the shop. These that came over to us had not been turned in to be repaired, these particular [fol. 1352] appliances may have been some that—I have a record of them, Mr. Blakeslee, if I had that here I could tell you. There may have been some that were taken from homes that were being vacated; for instance, rental appliances. Or it may be that some they were actually sent out and gotten; or there may have been some that were on the district themselves. They all came from the consumers' premises; they were not repaired ranges or appliances going right into the home; they were not taken directly from one consumer's premises to our laboratory. I think that is a matter of record, how long it has been since they have been used. I think it is entirely possible to readjust these appliances over there to 650 B. t. u.

Cross-examination by Mr. Hyatt:

I am thirty-five years old. I make a study of that chemistry that is required by me in the gas business and everything in that connection so far as chemistry is concerned that relates to my particular work. The kind of gasses that are contained in 650 B. t. u. gas as furnished at any time by any gas company would change; it would vary. I don't know the percentages contained in 650 B. t. u. gas. There are no gases contained in carbon monoxide. I can name more than one; hydro-carbon; the ethlene series, hydrogen is contained in 650 B. t. u. gas. The Marsh gas is another kind. I mentioned methene and othane. I heard of nitrogen. Whenever I need any figures for the characteristics in point of combustibility and heat content of carbon monoxide I get them; I have ready reference to them. Carbon monoxide is a highly combustible gas having a very high heat content and highly [fol. 1353] inflammable, so that if there is a flame around anywhere that the carbon monoxide gas would ignite if it has sufficient air. The only difficulty of getting carbon monoxide to ignite is to give it sufficient air. A gas stove cannot, by the opening of a shutter, be given sufficient

primary air to ignite all the carbon monoxide in a flame. In some cases you could open the shutter and you would get sufficient air; in other cases you would have to reduce the size of the orifice and also open the air shutter. If gas escapes in a room, and you strike a match in that room, if the quantity of gas is sufficient you get an explosion. If the mixture is proper you get an explosion. You get that explosion because you have an intimate mixture between the air and gas which makes an explosive gas, and touching it to the flame caused an explosion. That is because the gas is highly combustible, high- ignitible and highly inflammable. I made a study of thermo-dynamics. Just in a slight way of what is required of me in my duties. I studied Dr. Lucky's Professor of Columbia University in connection with thermo-dynamics, I took a course in mathematics with Dr. Lucky, nights. I never made any study of any book on thermostatics. I made a study of Smith's chemistry a book on gases. The Waterman had five burners of the Bunsen type. On the consumer's premises, of the plaintiff I found Vulcan gas ranges. The particular type had three, four, five burners, is the type that is manufactured today by William M. Crane Com- [fol. 1354] pany. We purchase gas stoves from the William M. Crane Company.

This experimentation that I conducted and which I described, on 560 B. t. u. gas was conducted at my laboratory, in 111th Street and First Avenue, on the third floor of the building. We made the gas on the premises. We had a Yunger's calorimeter. It is not a recording calorimeter. This gas was very carefully put into one holder and mixed with another holder, from one holder to the other. We determine the kind of gas we were using by making tests. We know absolutely and definitely by using a Yunger calorimeter and determining it. When you know a known sample you do not have to. This is *not* going in through the street mains. How we happened to know this was 550 B. t. u. — was we made a gas, put it into the holders, we had two holders connected with each other. One holder contains 75 feet of gas. We transferred the gase from one holder to the other in a number of times to make sure that our gas was not stratified and that we had an even sample of the gas when we tested it by the only known method of

testing a sample, and that is a calorimeter. This happens to be a Yunger approved calorimeter, approved by the Bureau of Standards themselves. All our thermometers are approved by them and every part of that working apparatus. You burn a known quantity of gas for a certain period of time under a calorimeter, which is a sort of miniature water heater, we will call it. During that time you measure the weight of water and take the temperature of the inlet and outlet water. Then by calculation and [fol. 1355] correction you finally determine by a formula the B. t. u. content in that gas per cubic foot, gross. That is we determined the amount of B. t. u.'s we shot into the water during a certain period. That period I believe is a period as we run now, of 20 minutes. They can run all the way from five minutes up to twenty minutes. We run a long period of time to make sure that we get a correct sample, so we ran for twenty minutes in order to determine the number of B. t. u.'s per cubic foot of gas. The B. t. u. is the amount of heat required to raise one pound of water one degree Fahrenheit under standard conditions. The temperature of the water in the calorimeter we used on this, to begin our experiment, was the same as the room temperature always. I used a thermometer to determine that. We know that it was the temperature of the room because we make it the temperature of the room water, and if it is not the temperature of the room it is made so by the use of a water heater, a gas water heater. In other words we heated up the room and the water at the same time. Air and water is not equally susceptible to heat, and to a like degree. The different kinds of gases we made on this occasion when we made the experiment; were 650, 665, 680, 695, 700 and 704. We made contemporaneous data at that time that we made the experiment. I have not got that data at the present time. Five men assisted me in making the experiment. While the experiment was was going on I supervised and watched the experiments very carefully. I made a record of what I saw. I have in my [fol. 1356] office a memorandum indicating what we took down at that time.

This flash-back is due to too lean a mixture, on the same principle as the automobile, when there is a flash-back in the automobile. It is not a lack of sufficient air; it is too

much air, in the form of primary air. Too much air and too little gas, it can be either one or the other, or both. We determine whether or not a gas appliance can be adjusted beyond no point about a 610 B. t. u. gas by actually making the experiment, by making gas and trying it. If a flash-back can occur through too little gas and too much air or too little air and too much gas we determine whether or not a gas stove can be adjusted so as to utilize gas above 610 B. t. u's; by actually making the experiment is the way we determine it. After once having determined that, then the adjustment is known and you know how to adjust. If I opened the shutter that gives primary air to the gas flame, and have a very low gas flame issuing from the orifices there is likely to be a flash-back, depending on some appliances, yes, on others, no. You can determine whether a gas stove can be adjusted to no point beyond 610 B. t. u.'s by making the actual experiment, having once found the proper adjustment, it is a very simple matter to make that adjustment on all those appliances on the district. Suppose I came to a gas stove that had been in the habit of utilizing 625 B. t. u. gas I would proceed to determine whether or not it could burn 650 B. t. u. gas by the character of the flame.

[fol. 1357] The character of the flame would be a very soft flame, entirely blue and if it is entirely blue it shows complete combustion, and if there is a yellow point it shows incomplete combustion, it does, if the flame itself is not interfered with at any point. In a Bunsen burner adjusted to maximum I do not know it to be a fact that there is a slight tip of yellow at the top. I do not know what is meant by the appearance of a flame on a Bunsen burner, because the appearance of a flame on a Bunsen burner can be yellow if the air is shut off. It is not true at the top of a Bunsen burner adjusted to minimum efficiency there is a yellow tip of flame.

The Utilization Department of the Consolidated Gas Company has nothing to do with getting new business. It does not go around and solicit business from hotels, clubs or places of that character. We consulted G. A. Colonel Fogg of the American Gas Association, as to the susceptibility of the gas stoves on the consumers' premises of the plaintiff to utilize gas above 600 B. t. u. There are a great quantity

of gas stoves on the consumers' premises of the plaintiff that cannot be used for gas having a B. t. u. content of over 610. It must be in the thousands. I actually personally visited to determine that fact, a great number. We know the apliances right now, and we know that they cannot go over that without being injured, or without being adjusted. I do not deny that they can be adjusted, they could be adjusted to burn 650 B. t. u. gas. All of them cannot be ad- [fol. 1358] justed to burn 650 B. t. u. gas. I would estimate maybe ten percent. I have visited consumers' premises a number of times to determine that fact, if that be the fact, at least five times, when the 22-candle power standard was on. I worked in connection therewith. I was the Engineer of Utilization. I have conducted experiments for various purposes of determining the variability of the 22-candle power gas with respect to the heat content, but, not with respect to illuminating content, we never cared anything about the candle power in our laboratory.

I do not admit any heat content for a 22-candle power gas, because I do not know what it is, and there is no relation between the two, but, I admit that it has a heat content. There is no definite relation between candle power and heat content. It is not true that the higher the illuminating power the higher the heat content of the gas. You can take natural gas that has not any luminosity at all, and it has a thousand B. t. u.'s. There are plenty of gases that have no iluminating content, but usually, a high illuminating content means a high heat content.

Further direct examination by Mr. Goetz:

Referring to the New York and Queens Gas Company case before the Special Master certain conditions existed in the territory of the New York and Queens Gas Company, and certain inspections and observations were made by me in that territory, substantially the same conditions and sub- [fol. 1359] stantially the same inspections and observation existed or were made in the territory of the Bronx Gas and Electric Company; they are exactly the same.

Further cross-examination by Mr. Donnelly:

In the territory of the New York and Queens Gas Company there are some high pressure gas mains in the com-

pany's distribution system. The Bronx Gas Company has high pressure mains, some that run up, I think, around 30 inches or practically abound. The pressure that that carries to the best of my knowledge is around 30 to 45. I don't know very much about the mains in either of the companies. As to what adjustments would be necessary of appliances, whether or not there are high pressure mains, that pressure, is never delivered to the appliance. That is governed in some way, whether by a house governor or district governor. Very slight differences in adjustment of appliances was necessary in the case of these high pressure mains used in the New York and Queens territory, practically no differences at all, because when the gas goes to the consumers' appliance it is practically at the same pressure. A gove-nor regulated the pressure. So far as adjusting the appliances are concerned, the fact that there was a high pressure main would not make any difference in these adjustments at the consumer's appliance. From six to eight men worked under my supervision in making the adjustments of the appliances in the Bronx Gas and Electric Company. They were employed in making the adjustments approximately [fol. 1360] six months—from some time in October, 1922, to some time in April, 1923, and sometimes on Sundays, because there were some homes we could not get into on week-days. They had to go there Saturday afternoons, and sometimes nights. I did not go around with the men while the adjustments were being made. I am speaking of the Bronx Company's territory now. I would probably go in the territory at least once a week, during the six month's period. I kept a memorandum of the visits that I made there but have not got it here with me. I would make from 10 to 12 inspections each time I visited those houses. Altogether, between about we will say 350 inspections of the separate homes, in the Bronx Company territory. About one a week in the New York and Queens territory. Out there I probably made from 6 to 8, as I recall, inspections. My personal inspection of consumers' appliances were more frequent in the Bronx territory than they were in the territory of the New York and Queens, that was for no particular reason except I was up in the Bronx a great deal, in the Northern Union and the Central Union territories, and it was very

much easier to make it in the Bronx. I do not live up in the Bronx. I reside in Brooklyn. There was nothing peculiar about the situation in the Bronx territory that made my visits to that territory more frequent. I made reports in writing to chief engineer, Mr. Weers of the number of days that the men were engaged under me in making these adjustments of appliances in the Bronx territory. If I recall the figure, the Bronx Gas and Electric Company is something like 10,000 meters, between 9,000 and 10,000 meters. [fol. 1361] Each of the houses of consumers was visited for the purpose of making these adjustments, that is to say our men reported to me that they made those visits, they did not have to make adjustments in all cases. In at least 90 per cent of the cases adjustments were made; it was not necessary to make adjustments of the remaining 10 per cent, because the mere appliance, some of them, of poorer design and we found some good appliances that were burning a very soft flame, showing that at one time they probably were out of adjustment; and when we got to the 600 B. t. u. value, they were then on the very soft flame, and that flame is just off the yellow. There is no reason to make further adjustments. When we were supplying a gas of approximately 600 B. t. u's, the inspectors adjusted all the appliances, or those appliances were adjusted by the inspectors to what is known as a soft flame at this 600 B. t. u. value, or a flame that is just off the yellow. Now, that made the appliances safe to operate at that adjustment from approximately 550 B. t. u.'s as a minimum to approximately 600 B. t. u.'s as a maximum. The adjustments in the Bronx territory were made to cover the same range of B. t. u. contents as they were made in the case of the territory of the New York and Queens, and through the whole system of the Consolidated Gas Company.

[fol. 1362] New York, April 28, 1924.

Met pursuant to adjournment.

WILLIAM T. RASCH, a witness in behalf of the plaintiff, resumed the stand.

Direct examination by Mr. Ranson:

The testimony given by me in the New York and Queens Gas Company case and also in the Bronx Gas and Electric Company case before the present Special Master, which testimony has been read into the present record, as to the types of gas appliances used in the respective territories of those companies, the inspection and testing of gas appliances, the adaptability of the appliances to the use of gas varying in b. t. u. content, the reason and necessity for changing the adjustment of gas appliances in connection with the change of the gas standard from 22 candle-power to the b. t. u. standard prescribed by the Commission, the nature and extent of the adjustment which was made of the appliances of the gas companies, and the feasibility of readjusting gas appliances to adapt them to the use of 650 minimum b. t. u. gas, also applies to the conditions and service in the territory of the Consolidated Gas Company. The same testimony also applies to the conditions and service in the territory of the companies of the Consolidated transfer of gas system, that is, the Standard Gas Light Company of New York, the Central Union Gas Company, the Northern Union Gas Company, the New Amsterdam Gas Company, and the East River Gas Company of Long Island City, which are plaintiffs in other pending actions. My visits and examinations of gas appliances were more or less frequent with respect to the territory of the [fol. 1363] Consolidated Company and the other companies on the Consolidated transfer of gas system. I was continually in the field during that time. The number of meters supplied by the Consolidated Gas System companies as of December 31, 1922 were:

Consolidated Gas Company	556,080
New Amsterdam, including East River	105,593
Central Union	113,195
Northern Union	86,475
Standard	59,207

That was a total of 920,550 on the Consolidated transfer of gas system. The cost to the various companies of adjusting the appliances by the gas supply inspection force under my direction to take care of the work made necessary by a change from the candle power standard to the b. t. u. standard authorized by the Commission's order of August 30, 1922 was: The Consolidated Gas Company $196,197.15, The New Amsterdam Company, including East River, $48,961.17. Central Union, $52,420.74. Northern Union, $32,825.49. Standard, $31,630.56. That makes a total of $362,035.11. Approximately 1,800,000 appliances were inspected and adjusted for the Consolidated and its system companies on the transfer system by the gas supply inspection force. By companies, they are:

The Consolidated	983,742
The New Amsterdam, including East River	220,917
Standard	168,228
Central Union	211,255
Northern Union	124,799

Approximately, the average number of men employed by each of these companies in connection with this inspection [fol. 1364] work during this period was, from October 23, 1922 to April 30, 1923:

Consolidated Gas Company	252
New Amsterdam, including East River	82
Standard	44
Central Union	88
Northern Union	52

The number of working days required by the gas supply inspection force to accomplish this work of adjustment for the Consolidated and its system companies on the transfer system was:

Consolidated Gas Company	156
New Amsterdam, including East River	152
Standard	153
Central Union	151
Northern Union	148

The requirements for the Consolidated and system companies, inclusive, to again readjust these appliances to the

extent that such adjustment would be possible so that they could operate safely on a minimum of 650 b. t. u. gas, I would estimate would be about 400 men one year, and at a cost of not less than $800,000. It would be much more difficult and more expensive to readjust the appliances. In the first place, it would require the closing of the orifices or the opening of air shutters, or both. The opening of an orifice is mechanically rather easy to accomplish, while the closing of an orifice is very hard to accomplish, mechanically. In practically every case it would require removing the orifice, where that was possible, and inserting a new orifice. Now, because of the great number of varying sizes—when I say sizes I mean as to thread sizes also, and orifices now in use in this territory, it would be very diffi- [fol. 1365] cult to obtain these orifices and to make them up would be almost impossible. It would involve considerable expense to get these different types of orifices. The appliances used in the district have different orifices. The orifices on some of them we will say are 40 threads per inch, and others are 36 threads per inch. There has never been a standard. Particularly is that true of those appliances that are sold by department stores and dealers, those of the cheaper type. I mean among the same class of appliances, that is, among stoves, for example. You could have a hot plate and you could have half a dozen different sizes of orifices that would have to be inserted into the cock itself. Taking a given type of appliance, or a given kind of appliance, I find on different premises different types of orifices on the same kind of appliances. If it was, for instance, a gas range of a special make it would have all the same size orifices, but it might have a gas range and a hot plate and a Radiant fire, and a gas iron, all of which would be different size orifices. All ranges would not have the same type of orifice. For instance, take an Oriole type of range, a Clark Jewel type of range and a Crane range, those orifices are not standard. There is a tendency to make them standard, but they are not, and there would be a great many on the district where there would be an entirely different size orifice. The same thing applies to every kind of appliance used by the consumers,—gas irons, and other things of that [fol. 1366] sort. Therefore, there would be a great many that would be obsolete. You could not possibly obtain those

orifices. It would mean where the orifice was an integral part of the appliance itself, or the orifice happened to be made of cast iron, that new parts would have to be obtained *it if* were possible to obtain them, and where it was possible to obtain them usually it would cost more to obtain those parts than it would cost to buy an entirely new appliance. I am speaking of the new appliances. There are a great many gas appliances now in use on the district of the different companies that are of obsolete design and unknown manufacture. Our inspection showed that. It would be absolutely necessary to supply new orifices on practically all the appliances now in operation, because there is no way that the orifice size could be closed by the use of a tool.

In making an adjustment of appliances in their present condition so as to fit them for the safe and efficient use of gas of not less than 650 B. T. U. per cubic foot, it is not easy to determine upon a definite character of flame by which our men could be guided in the work of readjustment. In one case when we step down from candle power to a B. T. U. standard at 600 B. T. U.'s, the flame character was very soft, and as we know, just off the yellow. When you go back, we would go to around 600 B. T. U. gas and then you would have to make a very sharp flame. That flame would be subject at times to flash back. It would be very difficult [fol. 1367] to determine just when you had that sharp flame so that the character of flame could be taken care of at the higher B. T. U. values. The cost of such a work of adjustment, and the length of time required for it would make it very much more expensive and take a considerably longer time, more expensive because of very much higher type of man required to do this work. It is very much harder for a man to determine on a hard flame than it is a soft flame, and further, the mechanical operation required to make these changes would necessarily require a better type of man.

Referring to the Consolidated Gas Company and the conditions on the transfer of gas system, and the conditions obtaining on the district as to these companies, even with the adjustment of the consumers' appliances generally to adapt them to the safe use of 650 minimum B. T. U. gas, they would not be as efficient or economical or generally satisfactory when operating on B. T. U. values from 550 up.

The majority of appliances could be made to operate safely, however, but the results to consumers and the efficiency and economy of the use of gas would not, in my opinion, be along lines satisfactory to consumers.

Cross-examination by Mr. Donnelly:

With reference to the time spent on the readjustment to conform with the Public Service Commission's standards of the Consolidated Gas Company and the companies on the transfer of the gas system, I have given the number of men employed in readjusting the appliances of each of the com-
[fol. 1368] panies. Those men worked continuously during the time on the same day they were employed. In other words, the men readjusted appliances of the Consolidated Gas Company on the same day that they readjusted the appliances of one or more of the other companies on the system. That might have been in a territory where there might have been a Standard meter and there might have been a Consolidated meter, and the Consolidated man *man* might have made that adjustment, or the Standard man might have made that adjustment. Daily reports were made in writing by the men of the time spent readjusting the appliances of each of the several companies. They were made by the gas appliance inspector to the supervisor, and the supervisor to the chief supervisor. I have seen all of those reports. The territories were allotted to the varous supervisors. Now, it might have been that the Consolidated was in Standard territory and those allotments were simply made in this way: That the group of men—gas appliance inspectors—that were nearest a particular shop of our various shops, were given that territory. Now, it did not make a bit of difference whether that was Consolidated, New Amsterdam or Standard; they took that entire territory, whatever it might have been. The same set of men adjusted all the appliances in a certain district, no matter whose consumers they were. The time spent for one company or the other was not reported as time spent for one company or the
[fol. 1369] other. I think I know what you mean there. When that was originally laid out, it was taken by the number of meters that each company had, and the per-

centage of that to the total number of meters was the percentage of men used. So therefore, the number of men allotted to each company, or the number of men required by each company, was in the proportion of the number of meters they had. All the company's men, as I have shown here, actually did the work. They were employed separately by the different companies, but the men of different companies worked under the one supervisor. And, for instance, if the Standard or Consolidated were in the same territory, those men adjusted these meters irrespective of whose they were. The number of men were paid by each company according to the number of meters in a certain territory. Those men worked indiscriminately on all those appliances.

I did not testify before the Public Service Commission in the proceedings had by it and which is known as Case No. 108, which had to do with the change in the standard of gas from a candle power to a B. T. U. standard. I do not recall having read over the testimony in that case. I can not tell you the territory in which the appliances of the Standard are located. I have not those locations with me. Of course, I did know at the time, but that is a matter that I can not remember. I worked in that territory for 19 [fol. 1370] years. I think the Standard runs from about 12th Street up to maybe 145th or 150th Street, on both sides, clean across the island. New Amsterdam has approximately the same territory. In other words, the Standard's and the New Amsterdam's territoris are practically the same. There are some differences, of course, within practically the same boundaries. And, of course, the New Amsterdam included the East River. That is over in Long Island City. Of course, the Standard is not over there. There were some appliances of the East River Gas Company that were readjusted. Those appliances were located in Long Island City, and the surrounding territory. The territory in which those appliances of the East River are located covers the entire Long Island City.

In readjusting to conform to the P. S. C. standard, they readjusted to approximately 550 B. T. U.'s. There was a range in that standard running from approximately 550 B. T. U.'s as a minimum to a maximum of 600 B. T. U.'s for safe operation. If it was necessary to go lower than

537 B. T. U.'s, it probably would have been necessary in a great many appliances to make further adjustments. In a great many appliances there would have to be another adjustment. The proportion of the entire number of appliances readjusted would be purely a guess on my part. I would approximate 25 per cent of the appliances would have to be adjusted again in order to meet a demand for 537 B. T. U.'s fixed by the Com-
[fol. 1371] mission. On what I would base that guess of about 25 per cent, I have in mind that some appliances, when the gas inspectors adjusted them, were not adjusted properly; that is, far enough so that they could come down from it. I have in mind such appliances as gas irons, which surely there would have to be a further readjustment on, and some types of radiant fires. Ranges generally I believe could go down to 537 without further readjustment, but there would be a quantity of appliances, and I would say about 25 per cent, that would have to be again adjusted. When the appliances were readjusted to meet the range of 550 to 600, that readjustment does not permit the company to go above 600 B. T. U.'s. With the readjustment as made you could probably go to approximately 610 B. T. U.'s or 615 B. T. U.'s. I speak now of continuous service. That does not mean that all appliances at 610 to 615 B. T. U.'s would become dangerous, but it does mean that some appliances or some types of appliances would become dangerous at that B. T. U. value on continued service.

[fol. 1372] Robert Huntley, a witness on behalf of the plaintiff, recalled, testified as follows:

Direct examination by Mr. Ransom:

I am familiar with the various parcels of land described in Plaintiff's Exhibits 258, 259, 261, 264, and 265, besides the land at the East 14th Street and West 42nd Street stations as to which I have previously testified, and have been familiar with them for a great many years. I have visited all of these properties shown in those exhibits just enumerated. I am and I have been familiar with the values of real estate in the vicinity of the lands described in all of the

exhibits. I have always kept myself informed as to values in these neighborhoods. I have kept myself familiar also as to the sales, the leases, the mortgages and other transactions relating to real estate in the parts of the Boroughs of Manhattan, the Bronx and Queens in which the land shown on the various exhibits is located. I do that in the regular course of my business for Joseph P. Day, Inc. The records which I testified I kept in the regular course of business for many years in my office as to sales, leases, mortgages and other transactions relating to real estate, includes records of transactions in the parts of the City in which the various parcels of land shown on those exhibits are located. I use such records in my work continuously.

I have made an appraisal of those properties as of June 1, 1923,—that includes the lands shown on these diagrams with the exception of the two parcels which were specified [fol. 1373] as having been acquired subsequent to June 1, 1923. I have formed an opinion as to what was the value on or about June 1, 1923, and since that time of the lands, if unimproved, which have been mentioned and described and which are shown on the exhibits enumerated. I have set forth in the schedules now shown, the amounts which, in my opinion, represent the values on or about June 1, 1923, of each of the specified parcels of land, if unimproved, which parcels are described and shown on Plaintiff's Exhibits 258, 259, 261, 264 and 265. These schedules set forth my opinion with respect to each of the respective parcels unimproved. I could give the figures which are here shown in connection with these block and lot numbers, locations and exhibit numbers.

Appraisal by Robert Huntley

Value of Land (Unimproved) as of June 1, 1923, as described on Specified Sheets of Plaintiff's Exhibit 238, Consolidated Gas Company v. Prendergast, et al.

Sheet No.	Block	Lot	Location	Value
1	239	1, 5	Hester & Elizabeth Sts	$181,500
2	368	1	11th St. Station	487,000
2	369	1, 10, 11, 12, 13, 14 & 15	11th St. Station	757,000
2	382	22	11th St. Station	345,000
3	989	1	15th St. Holder Station	227,000
3	982	13	E. 14th & E. 15th Sts. & Avenue C'	437,500*
3	988	1	E. 14th & E. 15th Sts. & Avenues C & D	680,000*
3	991	1	E. 14th & E. 15th Sts. & Avenue D and Marginal St.	361,755*
3	991	47	Bulkhead along Marginal St. bet. E. 14th & E. 15th Sts.	67,800*
4	870	60, 47	130 E. 15th St.	550,000
5	985	7, 19, 20	E. 17th & E. 18th St.	229,000
6	951	35	E. 21st St. Station	62,000
6	952	7, 29, 30, 35	E. 21st St. Station	372,000
6	953	1	E. 21st St. Station	565,000
6	978	5, 6	E. 21st St. Station	475,000
6	979	1, 27	E. 21st St. Station	582,000
6	987	37	E. 21st St. Station	176,000

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Appraisal by Robert Huntley—Continued

Sheet No.	Block	Lot	Location	Value
7	1090	23	W. 42nd St.	132,000
7	1089 1107	1, } 7, }	W. 41st & W. 42nd Sts., 11th & North River	2,000,000*
8	1092	16	44th Street Station	289,000
8	1093	9	44th Street Station	396,000
9	1028	38	212 West 57th St.	660,000
10	1457	6	E. 53rd St.	180,000
12	1157	1	W. 66th St.	1,076,000
12	1171	21	W. 66th St.	398,000
13	1670	1	E. 99th St. Station	567,000
13	1692	1	E. 99th St. Station	285,000
14	1682	8, 11	E. 111th St. Station	369,000
14	1683	18	E. 111th St. Station	88,000
14	1704	5	E. 111th St. Station	368,000
14	1712	2	E. 111th St. Station	87,000
15	1642	33	E. 114th St.	53,000
16	1998	50, 53, 54, 55 & 56	West 132nd Street	77,000
16	1999	1	West 132nd Street	240,000
17	2108	23	474 W. 159th Street	22,000
18	2497	132	Cromwell Ave. & 153rd St.	200,000

19	3236 2770, 2775-E 2775-F, 2775-G	1	Kingsbridge	265,000
20	2775-H, 2776 2777-J, 2778 2780, 2781		Hunt's Point	2,700,000

NOTE.—In the foregoing figures there is not included any allowance for the additional element of conjunctive value where the Company owns more than one block adjoining.

*Plots as to which Mr. Huntley testified previously.

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[fol. 1375] Astoria Light, Heat & Power Company, Astoria, Long Island City

Appraisal by Robert Hunley

Value of land (Unimproved) as of June 1, 1923, as Described in Plaintiff's Exhibit 259, Consolidated Gas Company v. Prendergast, et al.

Block	Lot	Location	Value
849	1	Astoria, L. I. City	$34,000
850	1	" "	4,700,000
859	1	" "	53,000
860	1	" "	50,000
870	1	" "	50,000
871	1	" "	54,000
881	1	" "	54,000
882	1	" "	84,000
893	1	" "	80,000
894	1	" "	108,000
895	1	" "	24,000

Note—In the foregoing figures there is not included any amount of additional element of conjunctive value where the Company owns more than one block adjoining.

Standard Gas Light Company of New York

Appraisal by Robert Hunley

Value of Land (Unimproved) as of June 1, 1923, as described in Plaintiff's Exhibits Nos. 264 and 265, Consolidated Gas Company v. Prendergast, et al.

Exhibit No.	Block	Lot	Location	Value
264	1456	17	E. 62nd Street Station	$199,000
264	1457	17	E. 62nd Street Station	190,000
264	1475	1	E. 62nd Street Station	52,000
265	1978	37	E. 123rd & E. 124th Sts. West of Amsterdam	128,000

Note—In the foregoing figures there is not included any allowance for the additional element of conjunctive value where the Company owns more than one block adjoining.

New Amsterdam Gas Company

Appraisal by Robert Hunley

Value of Land (Unimproved) as of June 1, 1923, as Described in Plaintiff's Exhibit 261, Consolidated Gas Company v. Prendergast et al.

Block	Lot	Location	Value
989	16	East 15th St. Holder Station	$164,000

[fol. 1376] With respect to each of these parcels of property, I have prepared separate sheets which show the mathematical computation which I used to confirm or verify my appraisal. It shows the details of the computation which I used for that purpose, and on some of these sheets I have put an indication as to the location and as to the type of building. I had a little information with regard to buildings that I observed and conditions of surrounding property, and if I were interrogated with respect to each of these parcels of property and as to the details of any mathematical computation which I used to check or confirm our value, I would testify to the details [fol. 1377] which are set out in each of these respective sheets.

(Here follow Plaintiff's Exhibits 258, Sheets 1-20; 259, Sheet 21; 264, Sheet —; 265, Sheet —; 261 —, which are printed as part of the Exhibits in this Record.)

Cross-examination by Mr. Donnelly:

I was asked by plaintiff's counsel to give the valuations to which I testified the following day, after the giving of my testimony on the prior occasion.

Before making up these valuations as to which I have testified, I did not know the valuations which Mr. Stevens had given in this case on the same parcels. I had not seen his figures, nor was I acquainted by anybody with his figures. And at this moment I think that I know what his figures were on the parcels as to which he testified. I have not a memorandum of them, but I had seen them. I had seen a form mentioned in which I was to get up these, and that contained Mr. Stevens' figures. I saw Mr. Stevens'

figures for the first time two or three days ago. I think it was after I completed my appraisals. I completed everything but four parcels last Wednesday or Thursday. I submitted them when they were so completed to Mr. Goetz. I went over the figures with him. At the time I went over them, Mr. Stevens' figures may have been there. I did not make any comparison of my figures with Mr. Stevens' figures at that time. Mr. Stevens' figures were the subject of discussion some time afterwards. They made a com-
[fol. 1378] parison of my figures with Mr. Stevens' figures. I mean by "they" I think Mr. Goetz. I have forgotten who else was standing there. I think it was last Friday. That conversation was in Mr. Goetz's office. On three or four of these parcels I had asked to have an explanation of the title; particularly on the waterfront down at 11th Street, and I had asked to have some data regarding the area of the Hunts Point piece, and I had asked to have some figures about the Astoria piece, and I had submitted figures and submitted tentative units at that time; but I could not complete the appraisals till I knew what was the right answer to those particular questions. I asked to have some figures on the Astoria piece of the areas. The valuation which I gave of the Astoria piece, I took the area given by the diagram in evidence here. I figured it out myself; but I am not engineer enough to tell the exact acreage of a place like that. Quite fortunately, I came within about two acres of the thing, but I would not feel sure that that was the correct engineering calculation. Speaking of the Astoria piece, the area upon which I gave my valuation was 312.67 acres. That was given to me by Mr. Alrich. I did not examine the tax maps to see what the actual acreage of the Astoria piece is, and I made no investigation to verify the information given to me by Mr. Alrich. I took the diagrams first and figured it up myself, and I arrived at 309 acres, and I submitted that figure tentatively, I think, on
[fol. 1379] last Wednesday or Thursday, but I said, "I don't know what these are," and I said, "before I give you final figures I want the exact area of this property by the engineers, whoever is figuring it out." But my own figures amounted to 309 acres; I could tell you that. My valuation of that parcel on the area given me by Mr. Alrich

was 312.67 acres. My valuation of that parcel is on the assumption that it contains 312.67 acres.

In my experience as a real estate appraiser, I have known two appraisers of equal ability and reputation in the real estate business to differ in their estimates of the value of the same property. As to each of these valuations which I have given here, all were based upon sales made by me; based on whatever information regarding sales and transactions I could discover. That includes sales which I took into consideration in arriving at my valuations of each of these parcels. It is not a fact that I took only those sales which give the higher as compared with the lower prices which I was informed they brought. I probably did not either take the highest or the lowest. I looked up all the sales that there were in order to enable me to form a fair judgment of what was a fair value. I did not pick out any one sale and say that establishes my unit. My valuations were based upon taking whatever sales I found, and giving such consideration to those sales as I thought they were worth. In some instances I probably put down figures from my own general knowledge of the neighborhood (the gen-[fol. 1380] eral knowledge of what sales have taken place and the estimation in which land values are held by speculation, by buyers and owners of properties), and I looked up the sales to inform myself if I was correct. In other cases I looked up a large number of sales before making up my unit. We got a great deal of information that is probably pure opinional expression of people that we come in contact with. It is a very common thing for me to be asked, what is a lot worth in a certain section? And oftentimes I have my opinion questioned or argued with by other people who are supposed to know, and we arrive at some general basis of what is the right valuation in a neighborhood. That is general information. I have to give offhand opinions, I suppose, as much as any man in the City of New York at different points and I always have a general knowledge of values in almost any section of the City. These valuations which I have given here are not offhand opinions. These are made after an examination of the property and a careful study of the transactions in the neighborhood, and I have arrived, through my years of judging value, at a certain value for this property, which I believe to be a fair market value.

In my examination of sales which I used as the basis of my judgment, I think in waterfront sales I went back as far as 1903 or 1904, they being waterfronts, not supplying me with a great many transactions. In the other sales generally I confined my investigation to about 1920. From 1920 up [fol. 1381] to 1921, 1922 and 1923. I may possibly have taken a sale or two that occurred around September; close enough. In my examination of those sales, eliminating from my question sales of waterfront property and confining it to property not waterfront, I always found that there was a range of prices on these sales. That is, some prices were higher or lower than others, as the case may be. For the purpose of arriving at my valuation, I did not take all of those sales and put them down and figure out an average that way; but I took some point between the very highest and the very lowest. I do not mean to say that it was an average, but I tried to give weight to what my general knowledge of a section and the amount of activity that there had been and the general demand for the kind of property that was sold, and I did the best I could to arrive at a fair valuation. Still eliminating waterfront property for the moment, and confining ourselves to property not waterfront, in examining the sales of the other kind of property from 1920 on, I took all the sales in the neighborhood of these various parcels, no matter what the character of the property was. In other words, in the vicinity of some of these properties there are what are known as tenement house neighborhoods. In those instances, I took sales of tenement house property as a guide to enable me to form my judgment here and made notes of them and gave them consideration. That pertains to properties that were small parcels, say, parcels 25 by 100, as well as larger [fol. 1382] parcels. I did give some consideration to the sale of small parcels. I took the sales as they came.

The percentage that I have given here for corner lots was what in my opinion is the correct percentage to add in each locality where I put an additional value on the corner, and that is based upon my own experience in appraising properties and studying sales of properties over a great many years. In this statement which has been incorporated as a part of my direct testimony the percentages for corners varied according to locations. When I gave those various

percentages, I do not think that I based them upon any sales of corner lots in the vicinity of the respective neighborhoods. In other words, where I gave ten per cent or fifteen per cent or twenty-five per cent, or whatever the percentage may have been, that represents my opinion of the added value which would accrue to a corner at that particular location, and that is something upon which a real estate man and I in the same line of business, of equal reputation and ability, might very well differ. I have found instances.

In arriving at the valuations which I have given here of these parcels, I gave no consideration whatever to the assessed valuations for 1923 or 1924. I do not know what they are. I did not look at them to see. In seeking information from the records or the Record and Guide, or wherever I went for the information as to what certain pieces of property sold for on certain dates, the information that I consulted nearly always gave the assessed valuations. Cases [fol. 1383] like that oftentimes I took the assessed valuations of the building away from the sale of the entire property to determine what was left for the land. The assessed valuation formed an extremely small part of the mental process by which I arrived at the valuation which I placed upon these parcels here. That only influenced my mind as to what to allow for the value of a building when I had taken and studied a bare sale. I, in the limited time which I had, could not examine each and every house thoroughly to make a separate appraisal of the building. I knew the general types of buildings in the neighborhood and I treated all sales the same way. I just took the assessed valuation of the building away from the total amount of the sale to determine what was the value of the land. In so far I gave some attention to the assessed valuation of property.

I started right in making these appraisals, I suppose, a week ago Saturday, and then I finished up these lists last night. I was working on them up until about six o'clock last night. Something like ten days. Visits to each of the parcels formed a part of the work that I did in making up these valuations, and I visited each and every one of them, only on one occasion. Most of them were years ago. I was familiar with these parcels prior to the time that I made my visits for the purpose of making up these appraisals.

I think that applies to each and every one of these parcels. Back in 1912 I appraised a great many of these parcels for the Consolidated Gas Company, and at times since then I [fol. 1384] have on many occasions expressed opinions of values of these properties and sometimes seen them for our sales department. Well, our sales department has been quite active in selling properties for the gas company and they frequently come to me and they say, "What would be a fair thing for me to get for this piece of property?" And I have sometimes looked at them to be sure about the surroundings. I have many times given them opinions from the knowledge that I already had. So I have been in quite a large measure familiar with these properties for a long time. Perhaps back in 1909 I was engaged by the City to appraise a piece that was taken for the Willard Parker Hospital, and at that time I looked all over these gas properties at the request of the City. I have looked all over that property up around 19th and 20th and 21st Streets, along in 1920 or 1921, for the Bahr Estate, who owned a block from Exterior Street to First Avenue on 23rd Street. I have looked over a great many of the properties down there at different times; so I have a pretty good knowledge of all that section over a number of years. I did not testify in the condemnation proceeding in which the Willard Parker Hospital was affected, for the City, or for any of the parties to the proceeding itself. I never testified in any certiorari proceedings for the company, or for the city, nor was I ever asked to make any appraisal in connection with any certiorari proceeding to reduce the assessment of any of these parcels.

[fol. 1385] It is not a fact that the valuations which I have given to these properties here have been determined in my mind by the fact that the parcels as to which I have testified are used by the company in its gas business. I have tried to eliminate that entirely from my thought and consider lands as if it were vacant and how it could be used. I considered the surroundings of these various parcels of land, assuming them to be unimproved lands, and considered what a vacant plot could be used for. If it was on the waterfront, the use would be for waterfront purposes; if it was in unrestricted zone, surrounded by tenants and manufacturing plants, I would say it was fit for manu-

facturing, and if it happened to be in an office building location, I would say it was worth so much for the reproduction of the office building. Speaking of a waterfront property, such business as needed a waterfront in conjunction with the business itself, the ordinary businesses that are carried on along the waterfront in Manhattan or on the other side, on the East River—the property abutting the waterfront could be used in arriving at the valuation given for that character of property. If I had property the best use indicated of which would be for manufacturing purposes, I tried to appraise the land for what it was worth to any manufacturer, a garage or any of the businesses that could go in an unrestricted zone. Eliminating the waterfront properties, with reference to the other properties, the use to which I considered it might be de- [fol. 1386] voted depended altogether on where the location is. Each particular parcel that I looked at was given its value according to the location and its development. You have down around 11th and 12th and 13th Streets—the property there is fit for the ordinary business that is carried on along the waterfront and the East River. The land back of it I should imagine would be better used for manufacturing or garages or something of that sort than for tenements. When you get up into 19th and 20th Streets, if the gas plants were eliminated from the neighborhood, I imagine it would go into a tenement, some of the land would go into tenement house use and some of it into manufacturing and commercial business use. If you go over on the west side, along 12th Avenue, that land would be sought after and would have its best value for business uses. The same would apply up around 99th Street and First Avenue. When you get over into a place like Hunts Point, it is more valuable for business than it is for tenements. When you get over into the territory of the Astoria plant, it is more valuable for business than it would be for tenements and dwellings. Sedgwick Avenue, if it were cleared out, I think would be more valuable, most of it, for business, than it would be for dwellings. I have tried to give consideration to the immediate surroundings in each and every parcel. I make no uniform rule to supply to each and every location in the City of New York, but I study each location as I find it. I would not limit any

[fol. 1387] piece of it to public garage purposes. It may be at the present minute, with the demand for commercial garages, that possibly the most likely purchaser of a plot would be the buyer who wished to use it for garage purposes, but that would not eliminate from my mind the fact that a manufacturer might wish to establish a large plant or a number of manufacturers might wish to establish small plants, and that these neighborhoods would be entirely suitable for them. I do not think there are parcels where my valuations were affected by the consideration that the best use to which they might be devoted was its use in business of a public garage. I do not recall stating that that is the only business. That is among the businesses, that I had in mind when I made valuations here. Suppose instead of these parcels being occupied for gas manufacturing purposes that they were occupied by a corporation, or an individual for that matter, in the lumber business, I would give the same value to the parcels in that event that I would in the consideration of the present use to which the properties are devoted. I would make no distinction. And the character of the manufacturing business to which I believe the properties might be devoted, if they were not used for the purpose of gas manufacture, did not enter into my consideration at all. I did not have in mind any particular kind of manufacture to which these properties might be devoted. I knew, of course, that I would not be able to get down on Avenue D and 13th Street and obtain a high-class dress goods or ladies' wear manufacturer to [fol. 1388] to move over there. I knew I could not do that, because of conditions which necessitated his business being located in another quarter, in order that it might be carried on most profitably. But there are certain businesses in the line of iron manufacture and of wood manufacture that could be successfully carried on over here and metal manufacturers of all kinds. You could establish a foundry over there that probably would not become a nuisance. At another place machine shops and all kinds of manufacturing of that sort, could be carried on over in that neighborhood while some other lines of manufacturing could not be induced to go over there, even if you gave them land or rent free. I do not think you could take a fine jeweler's concern and take that over into that section and give them rent

free and have them move over there. I probably would not sell the goods there—the manufactured product, but because of the general surroundings of the neighborhood, he would not want to be located there. He would pay a rent somewhere where his clientele would come to him.

All of these values which I have given here are for land unimproved. Some of the parcels have improvements upon them. Buildings, gas manufacturing buildings—buildings which may answer the description of office buildings and so on.

As to those parcels which are so improved, I got at the valuation of the land unimproved by studying the sales around the neighborhood; studied all the transactions I could find and pictured what the land would be worth, and [fol. 1389] what it could be sold for if improved with the class of development called for in that neighborhood. Some of those sales included sales of vacant property as well as improved properties. Let us take just one instance—Amsterdam Avenue we will say I happened to pick up a sale of a five-story flat on a 25 by 100 lot that was sold for $44,000. The building was assessed for $12,000. I said take away the $12,000 from the total sale, and you have $34,000 shown as the value of the land. Now, that you could apply to practically every sale of improved properties that I picked up.

Referring to the first sheet, Block 239, Lots 1 and 5, I faced the corner lot as 25 feet on Hester Street and 100 feet on Elizabeth Street. I believe that 60 per cent was a fair valuation of that. Ordinarily a corner can be used—a store might be used on either street, and I might give more than I would on a street where only one had much if any traffic. Now, Elizabeth Street has considerable traffic through it and Hester Street has more. It is for those reasons that I state a full valuation here of 60 per cent. A corner, of course, is always more valuable because of its light and air and access and because you can improve, under the building laws of the City of New York, a greater percentage of the area of a corner lot than you can of an inside lot. Now, the importance of a corner would be demonstrated by possibly other uses than the uses upstairs. For instance, if I were to appraise a corner at Fifth Avenue and 42nd Street,

[fol. 1390] I would give that two and a half times the unit over the inside lots—just as an illustration of what has been done. I am not bound by any rule of percentage as to what I shall put on a corner. I never tried to make it up. I am sure I could sell a corner on Elizabeth and Hester Street for 60 per cent more. Hester Street is an important street and Elizabeth Street is similarly important for business also. I did not give the 60 per cent rather than 50 per cent because the present use is that made of it by the Gas Company. I looked across the street and saw that there were stores and tenement houses on Elizabeth Street.

By the Master:

One of the considerations was that, under the building laws, a greater use of the area could be had for corner lots than for inside lots. About ninety per cent of the corner and seventy per cent on the inside—covered by buildings or tenement houses. If it is a business building it would cover ninety per cent of the inside lot and run back 92 feet on a 100-foot lot. A tenement district such as this is—this makes it possible for your tenement and business around Elizabeth and Hester Streets—a tenement house, you could cover about ninety per cent of the corner and this might very well be used for tenements. There is a very successful tenement house on the southeast corner of Hester and Elizabeth Streets.

By Mr. Donnelly:

It has always been very well rented and they have always gotten good rents out of the stores. The neighborhood is a mixed one of tenements and manufacturing. There is a good deal of manufacturing on Mott Street. On this very [fol. 1391] block, north of Hester Street, there is a metal company. They run a foundry and machine shop running through from Mott Street to Elizabeth Street. There are some furniture-making places in that neighborhood. There is a variety of manufacturers scattered in through Elizabeth and Mott Streets. Up to Canal Street and beyond Canal Street and up beyond Grand Street, they mix in factories and tenement houses. There are quite important concerns in there. Gulden's Mustard was on Elizabeth

Street for a long time, and I think it is there still. This metal company was quite an important concern. There are a number of concerns down in there. We have a good many plants in and around Elizabeth and Mott Streets. I do not remember any large concerns, taking in the entire block. A great many of these factory buildings down there of six and seven stories, will have two or three tenants on each floor. I have seen gas fixtures manufacturing shops down there and furniture making shops and brass works that do a variety of brass working, and iron manufacturers and machine shops. They seemed to be making gas fixtures, and I have seen gas mantle manufacturers in there and one concern semed to be making a lot of brass ornamental work. I think, in one place there that I had been in, they were making iron bedsteads of a certain type. I know I have seen the furniture business there—it is a variety of manufacturing. The building at the southeast corner of Hester Street is not one of the gas company buildings. Across [fol. 1392] from that you have the Italian Industrial School and right across the street you have a four or five-story tenement—that northeast corner. The presence on the southwest corner of Hester Street of that Italian Industrial School does not add anything to the value of this property in my valuation. I think Hester Street always had a certain use for tenements and stores for many years. The building on the northwest corner of Hester Street is not one of the gas company buildings.

On Block 368, Lot 1, there are two corner lots at $15,000, 50 per cent by way of addition for the reason that they are corner lots. I do not think 12th Street being as important in relation to Avenue D for any business purpose as Elizabeth Street would be to Hester Street. You have light, air and access here, on 11th and 12th Street. You could have the same character of manufacturing plants up in that section as they have down here on Hester and Elizabeth Streets, but you could not have successful tenements and stores on Avenue D and 12th Street as you could on Hester Street and Elizabeth, and you would have the same consideration that the building Laws give for the use of the corner lots as for Hester Street and Elizabeth Street. The 50 per cent for the corners up at Avenue D as compared with the 60 per cent is that the latter property is not in as

good a neighborhood as it is down at Hester and Elizabeth Streets. It was not in as good a neighborhood and it could not be used for the same variety of uses as the Hester and Elizabeth Street corner. I faced those lots on Avenue [fol. 1393] D—the length of the corner lot down 12th and 11th Streets. The 25 feet is established on Avenue D and 100 feet on 11th and 12th Streets. In other words, they are lots fronting on Avenue D.

I presume I have appraised at least a thousand corners in the City of New York, and I do not think that I have ever given on a 60 feet street less than 50 per cent additional value to a corner, and I have given 150 per cent additional, but I do not think I ever went less than 50. In fact, I can say that I think there are only two or three cases where I have ever given less than 50 per cent on a corner lot like a narrow lane like Gouveneur Lane or Fletcher Street, which are 20 feet wide streets—merely alleys, running into South Street. In one case I think I gave 33 per cent and in another case 33 1/3 per cent additional for a corner, but as near as I can remember now that is about the only time I ever gave any down-town Manhattan lot less than 50 per cent on a corner. The width of the street on which a corner lot abuts is one of the factors which determines that factor; that would be of some account. The importance of the street, as determined by the character of the business done on the street I think perhaps I could show that in this way: It stands to reason that the corner of Fifth Avenue and 42nd Street, because of the traffic that runs along 42nd Street, as well as along Fifth Avenue, would give a greater advantage to the carrying on of business and a greater variety of business than would be carried on at the corner [fol. 1394] of Fifth Avenue and 43rd Street—the difference in the travel along 42nd Street as compared with 43rd Street making the greater desirability of the 42nd Street corner. That would in my opinion, make a very great difference, because I have appraised both corners and in one case I gave 42nd Street an increase of 150 per cent over the value of a standard lot in the middle of the block and on 43rd I gave 75 per cent. So you can see what, in my opinion, was the comparison of values. I might say I could have easily sold either of the corners at the price I put on them. I did not cite the corner of 42nd Street and Fifth

Avenue as an example, except as an example in which the principle of the relative importance of two streets and the bearing of that on the corner value might be very apparent. I think Fifth Avenue and 42nd Street is one of the best corners in New York, and the corner which has a wide reputation throughout the entire world. However, you see there are sales—we have sold at auction in raw land where there was not very much surrounding except an elevated station. We have sold corner lots at auction where we got three times as much for the corner as for the next abutting lot. There was also the buyer. We did not take the money out of his pocket. Mr. Day was the auctioneer, and the personality of Mr. Day as an auctioneer is not equalled by any other man in the City of New York. I believe the personality of the auctioneer has a great deal to do with the price [fol. 1395] he gets at the sale of property sold at auction by him.

Block 991, Lot 1, East 14th and 15th Streets and Avenues C and D—that is one of the parcels which I covered in my testimony on the prior occasion. I have given 75 per cent for the one corner at 14th Street. 25 feet of the lot on Avenue D, running back 100 feet on 14th Street. I similarly located the other lot, 25 feet on Avenue D and 100 feet on 15th Street. I just did not face them the other way; that is about all that can be said of that. It would have worked out in probably much the same way. I would not have given—if you will notice, on the other side, on the west block, I figured the lot on 14th Street and swung the length around on the avenue and gave it 50 per cent over 12th Street.

In speaking of these two as to which I gave for one 75 per cent. additional and the other 50 per cent. if I had faced the lot at the corner of Avenue D and 25 feet fronting on 14th Street and 100 feet on Avenue D, I would have probably used the 14th Street value of $12,000 and added 50 per cent., which would make $18,000 and when it came to 15th Street and Avenue D, I would not think of facing the lot on 15th Street, but if I had, I would have given a greater percentage, because the length of the corner was on the more valuable street. If the neighborhood were entirely vacant, if it were entirely vacant land, I believe that almost any purchaser or any builder laying the property out would

certainly have laid out the 100 by 100 foot corner at 15th Street and Avenue D fronting the lots on Avenue D, be- [fol. 1396] cause if they should happen to be utilized in separate lots, the higher value would be on Avenue D. On 14th Street you have got a higher value on 14th Street than I did on Avenue D. It might be that if you had 100 feet by 100 there, that the seller would face his individual lots on 14th Street. It might be in that case he would get even a little bit more value than I have given by facing the way I did. He probably would get only 30 per cent. for the corner, and might get a little bit more for the inside lots which would offset the whole situation. I have taken this appraisal as well as the others as vacant land, and I am picturing all lots now as if these were vacant and my appraisal is based on that theory, that there is a much narrower choice of frontages at 14th and Avenue D than there is at 15th Street and Avenue D. I think that any person laying out the individual lots would lay out the lots fronting 25 feet on Avenue D at 15th Street while they might have a choice at the corner of 14th Street and Avenue D as to which was the better way to face the lots. I don't think that in adopting the method I have done, I have adopted a method that has given the very best to the gas company.

Take Block 870, Lots 47 and 60, 34 feet on Irving Place equals 1.9 lots at $50,000, making $95,000. For the one lot itself I give $50,000 and for nine-tenths of the lot $45,000. There should not be any difference in my valuation if I had taken that as a parcel of 34 feet and given my valuation on [fol. 1397] the front foot basis. I simply took the units of value for a lot. Instead of saying that land is worth $500 a front foot or $1,000 or $2,000 a front foot, I say a lot 25 by 100, standard size, was so much money. If I had taken a lot 34 feet front—the calculation would not have been any different if it was taken as so much, but I notice in here I have 1.9 lots at $50,000 and it should be 1.36, which would make that as a clerical error. 34 feet is equal to 1.36 lots. That should be $68,000—34 times 2,000 would be $68,000, making a total conclusion of $522,500 instead of $550,000. There was purely a mistake there in the calculation of 35 feet on Irving Place at $95,000. Unquestionably that should be $68,000.

On Block 870, Lots 47 and 60; 34 feet equals 1.36 lots at

$50,000, $68,000, instead of $95,000. Then the total becomes $475,000 instead of $522,333, and the plottages become $47,500 instead of $52,233. And the grand total is $522,500 instead of $552,566, which I stated in round figures as $550,000.

I have a corner there at Irving Place and 15th Street for which I have given two-thirds additional. I faced that 25 feet on Irving and 100 feet on 15th Street. I haven't the corner on Irving Place rather than on 15th Street, because if I were laying out the adjoining inside lots I would face them out on Irving Place, that being the more valuable frontage. If the corner was faced on 15th Street rather [fol. 1398] than on Irving Place, the adjoining lots on 15th would not bring as much to anybody who wanted to purchase it—a 25 by 100 foot lot on 15th Street would not bring as much as a 25 by 100 lot on Irving Place. The purchaser would pay more and a seller would be justified in asking more. A seller would be justified in asking more for the corner lot on Irving Place where the corner lot would be worth a great deal more if the entire frontage were on Irving Place, because it would control a great deal more of the valuable frontage. If this parcel 84 feet by 320 feet were all in one ownership, it would be just as usable to the owner of it. We do not sell plots ordinarily in New York City, starting with a plot 584 feet by 320. The usual quotation of value in New York City is a standard lot 25 feet by 100, half a block in depth. In order that I may build this up and find the value, I have to establish a value for a lot in the middle of the block on 15th Street, and one also in the middle of the block on Irving Place, and make my calculations from that to arrive at the value of this whole plot. The office building that is on there now has two entrances on 15th Street, but the 15th Street is the main entrance; that is the way that building is arranged.

Suppose Lots 60 and 47 were situated on 14th Street instead of 15th Street, I would give an added valuation by reason of the fact it had a frontage on 14th Street. I would not face the corner lot on Irving Place. I think I would put the 25 feet front on 14th Street—front all those [fol. 1399] lots on 14th Street. I would add for the corner on 14th Street probably 60 per cent. 66 2/3 per cent is the relative value of the corner lot just as it is. I will give

the corner lot on 14th Street 66 2/3 per cent after consideration. I might say it was worth 75 per cent on 14th Street. I would give it not less than 60. I have not thought of it in a particular line at all. I had not given it that consideration. My percentages have some relation to the relative value of one street to the other than where they are situated at a particular locality as compared with a lot situated at some other locality. And the additional value is due to the importance of the location—the importance of one street to the other.

In Block 952, Lots 7, 29, 30 and 35—I have two corners for each of which I added 50 per cent. I faced the corners on Avenue A, 25 feet, both facing on Avenue A. In other words, I regarded the two streets, 20th and 21st Streets, so far as giving the same addition to it for the value of having corners, as being about the same, 60 foot streets for 20th, 21st and 22nd Streets. And so far as my valuation of the 417 feet on 20th Street and the like number of feet on 21st Street is concerned, I took those at $8,000 a lot, and to the totals that I have worked out for each of those two stretches of 450 feet, is reached by taking a unit of $8,000 for a lot of 25 by 100. In this case it is 25 by half the block, running 98 feet deep. And the 68 100th of a lot— [fol. 1400] the value of that is reached by working out the proportion that that bears to a lot 25 by 100. 17 feet is 17/25ths or 68/100ths of a lot. I think if you faced lots on a block front like that you would face as many lots as you could on the valuable street. You see, on the block front between 20th Street and 21st Street, you have in an ordinary block eight lots, and you would face eight lots on the more valuable street. You would not take the corner—just take that block front with two corner lots. You will get as many lots as you could front on the valuable frontage. That is the method pursued by anybody who wishes to get the most value out of land. That is the way the property could be most advantageously used and sold. You would have to in order to set a fair market value; you have to arrive at the value at which a willing buyer and a willing seller would agree. You have to consider the seller as well as the buyer, in so far as most advantageous use to which the property could be devoted is concerned. I think that that advantageous use is present where you face

the land on an avenue rather than on the crosstown streets. If the corner lots were fronted upon the crosstown streets, then you have the value given only to the corner lot. That limits the benefit of Avenue A only to the corner lot. If, on the other hand, you front the four lots on Avenue A, each one of those lots has an Avenue A frontage and obtains the benefit of fronting on Avenue A. If you take a 100-foot [fol. 1401] lot 25 feet deep from Avenue A you have 100 feet of frontage on Avenue A accruing to that corner. The rest of the lots on the side street are no longer Avenue A lots. They are street lots. In a property of that size, if it were vacant, it might possibly be advantageous for a party to sell one lot, two lots or three lots as a buyer or buyers wanted them, and therefore the part of wisdom would be to front as many lots as possible on the valuable frontage. In speaking of selling, I am not assuming that the plot would be sold as a whole. The way in which I fronted the lots would be the same if the owner of the entire parcel were to split those up into lots and sell them in that way—I would then front the lots on Avenue A, rather than on the crosstown streets.

[fol. 1402] New York, April 30, 1924.

Met pursuant to adjournment.

Robert Huntley, a witness in behalf of the plaintiff, resumed the stand.

Cross-examination continued by Mr. Donnelly:

Referring to my appraisal of Block 239, Lots 1 and 5,—in 1921, southwest corner of Hester Street and Mott Street, 25 feet 4 inches by 100, with a five-story brick tenement and a four-story frame tenement. Sold for $43,000. The buildings were assessed at $8,000. That left the value of that corner lot $35,000. I got my information as to the price at which the property sold from Record and Guide. All these are taken from the Record and Guide. I did not make any independent investigation other than what I was told by the Record and Guide the selling price of the property was. In 1921: 28 Elizabeth Street, on the east side, 51

feet south of Canal Street, a lot 24 by 56 feet 3 inches, three-story brick loft, sold for $14,500, and the building was assessed at $4,000, which would leave the land $10,500, and it being a lot 56 feet deep, by using the calculation for a lot of that depth I arrived at a value of $15,200 for a lot full 100 feet in depth. In 1921, sale of 84-86 Elizabeth Street, on the east side, 180 feet south of Grand Street, 49 feet 5 inches by 86 feet, a little irregular in the rear, with two six-story brick tenements and stores, sold for $76,000. The buildings were assessed at $38,000, which would leave the land $38,000, would show two lots at $19,000 each. In 1922, 173-175 Hester Street, northeast corner of Mott Street, 46 feet by 100 feet, with a six-story tenement and store, sold for [fol. 1403] $102,000. The building was assessed at $46,000, which left the land $56,000, and allowing for corner lot and key lot value, I showed a unit lot in the middle of the block at $21,000. In 1922, 52 Elizabeth Street on the east side, 20 feet north of Canal Street, a lot 25 by 100, with a six-story loft, sold for $36,000. The building was assessed at $22,000, which would leave $14,000 for the land, standard lot 25 by 100. In 1923, the northwest corner of Hester and Elizabeth Streets, 24 by 59 feet 9 inches, with a four-story tenement, sold for $28,500. The building was assessed at $4,000, which left the land $24,500 for the corner 24 feet by 59 feet 9 inches. In 1923, 75 Elizabeth Street, on the west side, 59 feet 9 inches north of Hester Street. The lot was 20 feet 1 inch by 47 feet, with a three-story brick tenement. It sold for $10,000. The building was assessed at $2,000. That left the land $8,000 for a lot 20 by 47, which would indicate that a standard lot 25 by 100 would be worth $16,000. Those are all. There were no other sales than those I have given that would give me any information. There were transfers; but I looked through all of the transfers that I could find in that immediate section for the time being, but they seemed to be transfers from one member of a family to another, and I did not give them any consideration. A number of them that were merely nominal considerations—a dollar.

By the Master:

There were some at nominal considerations, of course those did not give me any information; there were several

transfers in there. I presume as many more as I have [fol. 1404] read. But they were not anything that I could get any information out of. Outside of those transfers of which I speak, there were no other sales.

By Mr. Donnelly:

When I used the expression "transfer" I meant to confine it to a transfer from one member of a family to another. Apparently transfers, and transfers at times where a man would own a piece of property, transfer it to a dummy, get a mortgage, and have the dummy transfer it back; that kind of a transaction. They were not what I would call sales. I think these are all the transactions that I can find that I would consider as being absolute sales of property. That was the nature of the transactions to which I referred. I do not think there were any sales reported by the Record and Guide other than those which I have given. I picked up everything that I saw. There were others which I looked at but which I did not regard as safe guides to take into consideration. I don't think those others included sales as distinguished from what I have described as transfers. I went as far back as 1920. I think I found nothing in 1920. You see, I confined myself, of course, to a limited neighborhood there. These sales that I have given all relate to properties that were improved with tenements, and I did not find any sales of any office buildings or buildings that were used as offices in that vicinity. The only building of that character that I know of in that vicinity might be the Italian school, which has some offices in it—industrial school; otherwise all the buildings in this neighborhood [fol. 1405] are manufacturing or tenements. Those tenements that were the subject of those sales are still in use as tenements.

By the Master:

I made no change of the corner of Hester and Elizabeth Streets from what I had on the supporting sheet. That was in Irving Place. The Hester and Elizabeth Street is the northeast corner.

By Mr. Donnelly:

Speaking of Block 368, Lot 1, the sales I gave at the time that I testified to my valuation of the 14th Street property apply here to this block. I think that we covered all of those sales at that time. The same situation would apply as to my appraisal of Block 369, Lots 1, 10, 11, 12, 13, 14 and 15. I think that when I looked up 14th Street I went down about as far as 12th Street on all those avenues, and I also quoted that sale of the Vacuum Oil Company at 10th Street and the East River; so that that list of sales would practically apply right here, and it would likewise apply to my appraisal of Block 382, Lot 22, and Block 982, Lot 13. I did not testify before as to Block 989, Lot 1, or to the 15th Street holder. The sales that I gave in testifying to the 11th Street property would apply to the situation here. I took the sales at that time up to 16th Street and quoted them all.

Block 988, Lot 1; Block 991, Lot 1; Block 991, Lot 47; Block 870, Lots 16 and 47, in so far as sales are concerned, were covered in my previous testimony.

Block 985, Lot 7: Sale in 1920, 310-314 Avenue A, northeast corner of 19th Street, 66 feet 1 inch by 94 feet 10 inches, three four-story and one five-story brick tenements. Sold for $37,000. The buildings were assessed at $6,500. [fol. 1406] Left the land $30,500. Analyzing that sale, I obtain a value of $11,500 for a standard lot on Avenue A. In 1922, sale of 558-560 Avenue A, northeast corner of 22nd Street, 49 feet 3 inches by 100 feet, two four-story brick factory buildings, sold for $40,000. The buildings were assessed at $9,000, and the land would be $31,000. Analyzing that sale, I obtain a value of $11,500 for a standard lot in the center of the block on Avenue A. There was another sale in 1921 on the east side of Avenue A, 49 feet 3 inches north of East 22nd Street, 123 feet 6 inches on Avenue A, 100 feet in depth on the southerly line, and then it ran 49 feet 3 inches to East 22nd Street, and had a frontage of 35 feet on East 22nd Street; then ran north 197 feet 6 inches to East 23rd Street; and then west 60 feet on East 23rd Street; and then south 24 feet 9 inches; and then west 75 feet to Avenue A, covered by a one and two-story public brick garage. It was not built particularly for that.

It had been used by the traction companies at one time, but remodeled a little bit. It is an old building which I had examined and appraised some three or four years before for the Bauer Estate. That sold for $115,000. The building was assessed at $30,000, and an analysis of that showed a lot on Avenue A at $10,000; 23rd Street lot at $10,000; and 22nd Street lot at $8,000. I think those were all of the sales which I examined in that particular neighborhood. I think they were all I found. There was a sale on Avenue [fol. 1407] B, northwest corner of 18th Street, 100 by 120, two-story frame building and vacant. It was a contractor's yard. Sold for $50,000. The buildings were assessed at $3,500. Left the land $46,500, which analyzed showed a lot on Avenue B at $8,800. The dimensions of that last piece, corner lot was 100 by 120. Those were all of the sales that came right in there at 17th, 18th, 19th, 20th, 21st and 22nd Streets. Those were not very many. A great many sales down below in 16th Street. They might apply here, but I tried to confine myself pretty close to this neighborhood. I do not think there is much difference in any of those streets from 16th, 17th to 18th Streets up. Those that I first gave were Avenue A properties. Those sales are a fair guide to a valuation of the parcel here, Block 985, Lots 7, 19 and 20. They would indicate the value of lots on Avenue A in this general neighborhood. You see, they were up there at 19th Street, 22nd Street. The character of the neighborhood there in that vicinity is largely dominated by the gas company's property. The block 22nd and 23rd Street is a combination of old buildings. They have, a number of them, since been burned down. When they were in existence they were occupied by lumber people and people who manufactured. I think there was one fellow in there who had a rag shop, that occupied about 200 feet by 200; and there was a contractor's yard, and there was storage of old traction effects. I suppose there were a lot of old iron fixtures of one kind and another for trolley cars that were [fol. 1408] down on the Marginal Street, and then this garage was on the Avenue A front. The general surroundings in through 17th Street, 18th Street, 19th, 20th, 21st and 22nd Streets—outside of the property occupied by the gas companies you will find lumber yards, dairies, garages—I think there was a wet wash laundry in one of those build-

ings, and there were some wood-working plants. I am speaking now going back to Avenue A, and running east over to the river. Running over west from Avenue A are tenements and shops, most of First Avenue. Mostly tenement stuff. There is not much vacant land in the vicinity of this block. There is land with small unimportant improvements on them, like a contractor's yard, that would have a stable and some store house for machinery in that, and have some vacant land, open yard space, but as vacant land, unoccupied land, I do not think there is any around there. There is no particular trend of development in that section there, except that I think that they have put over a number of garages in that section of late years. This property on the East Side of Avenue A, north of 22nd Street, was a brick garage, and the same use is being made of it now. It has been there at least five years, six years, to my own knowledge. I appraised all of that Bauer Estate some years ago—five or six.

A lot at the northwest corner of 18th Street and Avenue B, 100 by 120, sold for $8,800. My analysis did not show how much that sale showed for a lot on 18th Street. I took [fol. 1409] the Avenue B frontage. If it were reversed, it would work out the same way for 18th Street. I considered them right there at about the same value, on 18th Street as compared with Avenue B—no difference between the two. In fixing my valuation on Block 951, Lot 35, I took into consideration this same list of sales, and that would apply there. The same holds true of Block 952, Block 953, Block 978, Block 979, and Block 987, which all applied to the East 21st Street Station,—the same sales there.

Speaking of those blocks which I just enumerated, I think I took all the sales that afforded any information. Of course, there are transactions that take place in the neighborhood, nominal considerations, apparently transfers from one interest to another. In one instance there was a transfer of a dairy building, but as it went from one dairy to another I sort of figured that the very high figures represented in that included a business, because I could not figure out the value of land and building myself to reach their heights, and I should say that it was probably a transfer and would not be a very good guide for me. If I had accepted it as a sale I would probably have gotten, as nearly

as I figure it, I would have gotten up to about $30,000 for a lot on one of those avenues, and I did not believe myself, my judgment would tell me that that was not right, that I could not sell land at that figure. In giving my valuation of Block 1090, Lot 23, I took in the list of sales which I gave at the last examination as applying to the 41st Street and [fol. 1410] 42nd Street and that would also hold true with reference to Blocks 1089 and 1107 which I testified to at the last session. I testified to those at the last hearing, and I gave a unit of $20,000 on 42nd Street, used the same unit in appraising Lot 23 in Block 1090. That is the lot on the north side of the street, speaking of Block 1089, Lots 1, and Block 1107, Lot 7. That is the way it appeared on the list of properties that were given to me to appraise.

I recall being asked that question on the prior occasion of my testimony here whether in making my appraisal of Block 1089, Lot 1, and Block 1107, Lot 7, I assumed the land in the bed of 12th Street belonged to the plaintiff Company, and I stated that I understood it belonged to the Gas Company. Block 1107, Lot 7, I take to be the land in the bed of Twelfth Avenue. In giving my valuation of Block 1093, Lot 9, I took into consideration the following: In 1920, a sale at the northeast corner of Twelfth Avenue and 50th Street, 70 by 40, two-story brick tenement and store, a partition sale, sold for $25,750. The building was assessed at $3,000, which would leave the land $22,750, and an analysis of that would show a standard lot $15,000. That was in 1920. That was partition sale at public auction. I regard that as a fair guide. It is a matter of the sale; that is the price that it brought. I say yes, partition sales in which the public makes a price, and I consider them sales. That particular sale was a sale at public auction, and I was not at it. I don't know how many bidders were there. The property was sold to Peter J. Daly. I got that information from the Record and Guide. I did not make any independent investigation of that sale. At the same time there was [fol. 1411] a sale of 682 Twelfth Avenue, East side, 70 feet north of 50th Street, property adjoining the first sale mentioned. That had 30 feet frontage on 12th Avenue. It ran east 125 feet, south 100 feet 5 inches to 50th Street, 85 feet on 50th Street, north 70 feet, and then west 40 feet to the beginning. That was an old frame building and vacant

land. It sold for $33,000. That analyzed would show a lot of $13,000. The building was not assessed at all. The assessment was $36,000 and $36,000. It was not given any value. It was sold for $33,000 to the Shamrock Towing Company. I don't remember what use has been made of the property since the time of the sale. I think it is at the present time being used for the general purposes that 11th Avenue is used for, a storage yard for the storage of building material.

Speaking of that partition sale at public auction, with the two-story brick tenement on it, 70 by 40, the assessment there showed that the building was worth $3,000, and my analysis gave the land $22,750. In 1920, southeast corner of 50th Street, 83 feet 10 inches by 100 feet, with one and two-story frame stable, vacant, sold by the Astor Estate to David Terry and Alva Staples. Private sale, consideration $47,500. The building was of practically no account. That would indicate that a lot on 12th Avenue was worth $10,000. A resale of that property in 1921 for $100,000, would indicate that a lot on 12th Avenue was worth about $21,000. The same buildings there on the resale are used for brick storage. I do not think that property [fol. 1412] was bought to round out a plottage. But just for the purpose of accommodating a firebrick and special brick business there. A sale in 1920 on 50th Street, north side, 225 feet east of 12th Avenue, a lot 25 by 100, with a one-story frame stable. That was a part of that same partition sale in which Charles F. Brown was Referee. That was sold for $12,666.66. That building was not assessed. It would indicate that the lot on 50th Street was worth $12,000. At the same time a lot, 641 West 50th Street, 250 feet east of 12th Avenue, 50 by 100 feet, vacant, sold for $30,000, which would make a standard lot on 50th Street $13,500 and to reach the price of $30,000 would add plottage of 10 per cent. At the same time, a sale on 50th Street, north side, 40 feet of 12th Avenue, 85 by 100 feet, vacant, sold for $33,000, which would indicate a lot was worth $9,000. It is rather hard to reconcile two sales there because you have the sale to the Shamrock Towing Company for $33,000, which includes these two lots which are quoted as a separate sale, and the transfers made to the Shamrock Towing Company. I should imagine that that sale to Mc-

Guire must have been set aside in some way, or he never attempted to take title, or passed his bid over to the Shamrock Towing. I don't know which way that was done, but that is a published record of the bidding on that piece of property. Personally, I would be inclined to throw that out of my calculations because the actual transfer went to the Shamrock Towing Company. There is a sale in 1923 of the northeast corner of 12th Avenue and 14th Street. I [fol. 1413] think that was made along in July, 1923. 217 feet on 44th Street, 125 feet 10 inches on the easterly line, 195 feet on the northerly line, the 12th Avenue front being a little on a curve, and being about 130 feet. Sold for $170,000. No improvements; vacant property. That would show that a lot on 12th Avenue was worth $21,700, and a lot on 44th Street worth $12,000. That was a private sale; the Consolidated Gas Company sold the property to Taylor, I think the party's name is. No use has been made of the property since the sale. It was bought, however, for improvement and they probably will improve. I got my information as to that transaction from our office, our salesman who made the sale. There are other sales. The southeast corner of Twelfth Avenue and 45th Street, sold by our office, 76 feet on Twelfth Avenue, 181 feet on 45th Street, 75 feet on the easterly line and 195 feet on southerly line sold for $100,000. Analyzing that sale I get the standard lot on Twelfth Avenue at $16,600. I believe that I quoted all the other sales. That was vacant land. The rest of this list of sales I have here I think I quoted in my previous testimony. The testimony that I gave relative to Block 1093, Lot 9, so far as the sales are concerned, applies to Block 1092, Lot 16. Some of these sales which I have just enumerated were on 50th Street, which I regard as being a safe guide for values on 44th Street. The character of the development on 50th Street is largely manufacturing, stabling and a variety of shops, a little of everything. All [fol. 1414] of that section up in through there has been used—it originally started as a sort of stabling place, asphalt companies down in through there, and building material people. Sand and gravel, and brick market, everything of that kind. 50th Street is sixty feet wide. The width of 44th Street is sixty feet. Comparing the character of development on 44th Street with 50th Street, the prop-

erty on 44th Street is quite largely used by the gas companies, but take the immediately surrounding properties there, they are something of the same sort. Of course you had car barns on 42nd Street, and you had a variety of businesses. Nearly all of that section west of 11th Avenue, all that property in through there has been used for what we term coarse businesses, not important buildings. You have your piano factories, you had at one time a big carpet works down there. You have had a number of manufacturing concerns that had six and seven story buildings, but the great development over there for years was the one and two-story factories. I am speaking of that entire section, from 42nd Street north up to 59th Street. There is a great deal of that, a great deal of the old buildings around there yet, but it gets picked up occasionally when you get up around 53rd, 56th, 57th Streets, where you had some important buildings in connection with the automobile business. They must all be considered, the general neighborhood. We have hold sales up around 56th Street, where we didn't get any more value for lots than were obtained around 50th Street, and I have at time canvassed. I suppose every piece of land that there was from 42nd Street [fol. 1415] north to 59th Street, trying to find locations, and I did not find that there was so much difference in those streets as to the prices asked for properties and the prices obtained at sales.

By the Master:

The new piers that the City built up there for the steamer lines are built right here on the Consolidated Gas Company property, 44th Street. They run up to 47th Street, commencing at 44th Street. That gave a speculative impetus to property through there. There has not been a vast amount of change in actual building development since they came in there. Of course, they are building all along up the North River there. There are piers up above here, the steamboat piers, like Furness, Withy & Co., and the Italian Line, up at the foot of 55th Street, but those particular piers that were planned here, they took in the front of the Consolidated Gas Company's property, and they have changed the lines of Twelfth Avenue to accommodate those piers. That has not affected the development in those blocks as yet, or

made any specific change in the character of the use and occupancy of the land. There has been a very considerable change up in the neighborhood of 55th Street, 56th Street and 57th Street, because of the automobile business that is located down in there, but it has not affected this point just yet, but there is that speculative feeling which follows a change and they are looking to have some important changes. The New York Times is acquiring a place over on Eleventh Avenue for what we expect to be an auxiliary [fol. 1416] to their business, and other people are picking up pieces.

By Mr. Donnelly:

I don't think in this particular case I would go as far up town as 59th Street and take sales made up as far north of 44th Street, for the purpose of arriving at a valuation of properties on 44th Street. I think I would limit myself to south of 50th Street, because north of 50th Street there has been improvements made up there, there have been some important buildings erected between Eleventh Avenue and Twelfth Avenue that I think have had an effect on the value of land up there. It is practically impossible now to get any plot of land up above 54th Street for less than $15,000 or $16,000 a lot, between Eleventh and Twelfth Avenues. In other words, the character of the development from 44th Street up to 59th Street is showing a somewhat different trend than the character of the development south of 50th Street. Those streets north of that 50th Street section have been developed. South of 50th Street they have not been developed. They are in the transition stage at the moment, and we do not know just what it is going to be.

By Mr. Chamberlain:

I think that the presence of the gas plant has an effect on the entire surroundings, and it has an effect in depressing the value.

By Mr. Donnelly:

In arriving at my valuation of Block 1028, Lot 38, the sale of which most impressed me there was the northeast corner of Seventh Avenue and 57th Street, 100 by 110,

which sold for $650,000, used for an apartment house site. [fol. 1417] An old two-story tax-payer was on it at the time of the sale. It was torn down so I presume it did not add to the value of the land, and that sold for $650,000 in 1921 at private sale. My information of the price is derived from the Record and Guide. I was informed that that was the price paid at the time. I was asked to appraise the land and building for the purpose of a mortgage loan, and was informed that that price was correct. I got that information from Morgan's broker, who brought in the loan, and it has been since developed by putting up a high class apartment and stores. You haven't many sales on 57th Street there to give you any gauge. There was an earlier sale of the corner of Seventh Avenue and 57th Street, the plot which adjoins this property of the Gas Company, but it was sold in a dull market. I think it was 1917 or 1918. I haven't the exact date of it, but I know it is quite some time ago. I knew of the sale and analyzed it at the time, and it showed at that time a lot on Seventh Avenue, or you could swing it around on 57th Street, whichever way you wished, and showed the value of a standard inside lot, from which we built up our calculations. About $90,000 on Seventh Avenue, or you could revise it and swing it on 57th Street and show about $90,000. No difference between thetwo. At that particular time it was really a question whether 57th Street was not more valuable than Seventh Avenue. I think that the ordinary broker appreciated 57th Street more than he did Seventh Avenue. There were no other sales there immediately at that time that would be near enough now to fix [fol. 1418] these values. There were sales in there, the collection of the site of the Commonwealth Hotel. It would be pretty hard to make a very good comparison of the sale of the Navarre Apartments at 58th and 59th Streets and Seventh Avenue, they having a large number of fireproof apartments on them. It was calculated when the sale was made, that they were going to pull down those and erect a grand hotel on that place, but it never transpired. So, I don't like to throw the buildings into the discard in a case like that. If you did, that would show some very high values, up to $200,000 on Seventh Avenue, and up to $200,000 on 59th Street for a standard lot. But, there have not

been those improvements. I know that the northeast corner of 57th Street and Broadway, has been valued and negotiations were carried on for it at a price which would indicate about $250,000 for a lot on Broadway, though it is hard to swing that value around on to 57th Street, the northeast corner. Broadway values there are not comparable to values on 57th Street, in the locality of the plaintiff's property. These things I happen to know about, I say, it is hard to swing that value around and adjust it to the 57th Street side of that property. It is only a small piece. But, on 57th Street, in this block, we don't find sales, except this one for $650,000. That is a corner of Seventh Avenue, but it was appreciated because of the 57th Street front. The company's property is on the south side of 57th Street. [fol. 1419] And my unit of $125,000 for a lot on 57th Street applies to the south side of the street. The value of the company's property would not be any higher if it was on the north side of 57th Street. I think 57th Street there is of equal value on either side. 57th Street is 100 feet wide. Apartment houses are on three corners of Seventh Avenue and 57th Street, and you have the Carnegie Hall on the southeast corner. You have the Art Club o/ the north side and the Engineers Club on the south side, and you have the General Motors Company at the corner of Broadway, and the Gould property on the north side of 57th Street. I think that takes up most of the block. Outside of the gas company's property there are office buildings on that block only at the corner of Broadway. That would be about 100 feet from the westerly end of this building, of the gas company's building. The block there is a little less than 400 feet, I think, and from Seventh Avenue to Broadway, about 400 feet. In valuing this Block 1022, Lot 38, I considered the land would be used for vacant land. They would unquestionably put up a high class apartment in there today, I think. I think they have plenty of office buildings up there for the present, and I think an apartment would be the very best improvement at the minute. I would say an apartment house would be the most valuable use to which the property could be devoted, assuming it were vacant land, in June, 1923. That office building that I gave a minute or two ago was the nearest in point of distance to the gas company's property. Right across Broadway they have the big Fisk

[fol. 1420] Building. Broadway in the neighborhood of 57th Street is an office building neighborhood. You have the United States Rubber Company Building, you have the Fisk Building, that is an office building, and the General Motors Building is used for its executive offices. Those are all large buildings occupied partly by the owners and partly rented out. Of those, the U. S. Rubber Company Building is a tall building; the Fisk Building is a tall building; the General Motors Building I think is nine stories, as I remember it; and you have the Gotham Bank Building up at 59th Street and the Circle, which is purely an office building; the Jermyn Building on Broadway at 61st Street is being considered now as a proper building to be changed into an office building. Then you have the latest purchase by Hearst of the property on Eighth Avenue from 56th Street to 57th Street, on which he proposed to erect a high class office building; and Hearst has also had—for three years past—a plan out for the erection of a very tall office building on the old Durland Riding Academy site on the north side of Columbus Circle at 60th to 61st Streets. That is not used by the public now. That has been torn down and they put up two-story taxpayers with foundations to carry 20 stories. That is part of the plan. I make no question that eventually there will be a great deal of office building up in this general neighborhood. The Fisk Rubber Company has tried to get other tire companies in, and they have quite a [fol. 1421] number of them, and they have rented space to other lines of business. The United States Rubber Company has its own office and it has a variety of tenants. The General Motors Company occupies a considerable portion of their building and they have two or three sub-tenants. Ford started to rent out some of his office space on 54th Street and Broadway, and then he occupied it all himself.

Block 1457, Lot 6: In 1923 we have the sale on the north side of 60th Street, 112 feet 2 inches west of Avenue A, 200 feet 10 inches by 210 feet 10 inches to 61st Street, vacant. It was an old three-story frame school and tenement, the buildings did not amount to anything, counted as vacant land, sold by the Consolidated Gas Company to the Yellow Taxi Corporation for $130,000, which indicated a lot at $7,500, and you have the re-sale of the property in July, 1923, for $180,000, which would indicate that a lot was

worth $10,000. Since the re-sale, it is used as a public garage. Large garage: Yellow Taxi Company, on 60th and 61st Streets, just west of Avenue A. The re-sale was by the Yellow Taxi Corporation to the Yellow Taxi Realty Company. I don't know whether it was an inter-company sale or not. In the meantime I think that they have done a considerable amount of work in taking out the rock which lay on the premises, and probably that transfer represented that particular cost of the work that has been done getting the land down to a level grade. There was also a sale about that time that was made by my office on the west side of Avenue A on 60th Street, running back 112 feet from the avenue, and taking in the whole block front. That com- [fol. 1422] pleted a sale of that piece of property. We sold that for garage purposes to separate people. Independent concern. I know it is figured up that a lot on Avenue A was worth about $10,000. I do not seem to have just the particulars of that sale right here. It was made in 1922. It is 200 feet by 212 feet 2 inches. It was vacant and since developed for garage purposes, on the entire plot. I think that it is as good a use as could be made of the property, yes, with the surroundings of gas tanks. That sale and the other sale to the Yellow Taxi Company and the re-sale of that property are fair guides to enable me to arrive at the valuation which I have placed upon this plot. Those are sales which were made at private negotiation right in the neighborhood. I don't know how we could get anything much better. The valuation which I have given on Block 1457, Lot 6, is based upon the most valuable use to which the property could be put, if it were vacant property, such as a public garage, for instance. There are other industries in that neighborhood. You find lumber yards and you find garages and you find manufacturing plants of various sorts in this particular neighborhood. Lumber men did pay the price that I put upon this property, for lumber purposes on the corner of First Avenue and 61st Street, or were willing to. That is, there was a division of interests in the block bounded by 60 and 61st Street on First Avenue, lots which run down perhaps 350 feet from First Avenue, in which the interests who conducted a wood-working [fol. 1423] business, lumber business on the premises, agreed among themselves that their lots were worth $8,000

apiece, and the rear lots probably were 20 feet above the grade of 61st Street. In other words, they admitted that that was the value, and it was for a lumber business. Lumber people could pay these prices.

That would apply just as well at 1457, Lot 6. If people engaged in the lumber business wanted to buy this lot, assuming it was vacant land, I think they would be willing to pay the price that I have put upon it. If they wanted to sell this land I do not think I would have any trouble getting the price that I have placed on it, and it might be that I would get a higher price, I would agree to go out and find a buyer for the land at the price that I have put upon it. I will agree to do that within the next three months' time, which is reasonable enough to go out and pick up a customer. I think those were the only sales in there. There were some sales on Avenue A that would have more bearing, possibly, on waterfronts than these particular things. Our office sold the plot on Avenue A at 63rd Street, the old American Malting House, and that was afterwards sold to the Rockefeller Institute, but it takes in the whole block from Avenue A down into the river, and I do not think that the lots there would be just a guide for land in between Avenue A and First Avenue. I think those are the only sales that are shown right in there by the Record and Guide. None recently. Eight or ten years ago the Schermerhorn Estate sold land up in 63rd Street, and some [fol. 1424] land up in—I think a few lots on 64th Street, but I did not go back to those sales. At the time those sales were made I think they sold their land at the rate of $10,000 per lot. I know I was called in to advise about it for John Weeks on two or three of the parcels that were sold, and they were getting $10,000 a lot, and I said, "Take the money."

In arriving at my valuation of Block 1157, Lot 1, I took into consideration a sale made in May, 1923, south side of 6.th Street, 160 feet west of Amsterdam Avenue, 50 by 100 feet 5 inches, two three-story brick and frame tenements, and two-story frame stable on the rear, sold for $32,000, in May, 1923. The buildings were assessed at $3,000. That would leave two lots valued at $29,000, or about $13,000 for each lot, if there was plottage allowed, or it is $14,500 a lot if you do not allow plottage, and as

there were buildings included in this sale which were not of very much account and the thought is that they will be torn down and a new building erected, that sale might easily indicate that the party was willing to pay $16,000 for each lot. The buildings are still there. Other sales there are as follows: In 1920, 166 Amsterdam Avenue, on the west side, 75 feet north of 67th Street, 25 by 100, with a four-story brick tenement front and a two-story frame building on the rear. Sold for $38,000. The buildings were assessed at $4,000, which would leave $34,000 as the value of a lot 25 by 100. In 1920, 112 Amsterdam Avenue, on the [fol. 1425] west side, 25 feet south of 65th Street, a lot 25 by 75, with a three-story brick tenement, sold for $25,000. The building was assessed at $2,500, which, subtracted from the total sale, would leave the land $22,500 for a lot 25 by 75, but as it is a key lot I should figure it out that it represented a value of $22,000 for a standard lot in the center of the block. In 1920, the northeast corner of West End Avenue and 67th Street, 100 by 125, with a five-story factory, sold for $165,000. The building was assessed at $65,000, which would leave the land $100,000. That, analyzed, would show that a lot on West End Avenue, standard, in the center of the block, would be $16,000. This property re-sold in 1922, for $250,000. Since the re-sale of that property that I just referred to, there was no change in the character of the development. It has still got the five story factory building on it; the same property. In 1920, that northeast corner of West End Avenue and 61st Street, Lot 25 by 100, with a five story brick tenement, sold for $23,000. The building was assessed at $9,500, which would show that a corner lot at that point was worth $13,500. In 1921, the southwest corner of 65th Street and Amsterdam Avenue, 25 by 75, with an L 25 by 50, a three-story brick tenement on the corner and a one-story frame building on the street, sold for $38,000. The buildings were assessed for $2,000, which would leave the land $36,000. Analyzing that sale, I would obtain a value of $20,000 for a standard lot on Amsterdam Avenue between 64th and 65th Streets. In [fol. 1426] 1921, 344 Amsterdam Avenue, on the west side, 50 feet north of 65th Street, lot 25 by 90, with a five-story tenement, sold for $44,000. The building was assessed at $7,500, which would leave the land $36,500, as shown as the

value of a lot 25 feet wide by 90 feet deep. In 1921, there was a lease of the southwest corner of West End Avenue and 65th Street, 100 by 100, vacant, New York Central Railroad to the 111 West End Avenue Company, at an average rental for ten years of $3,500. Analyzing that lease on the basis of a six per cent investment would show that a lot on West End Avenue was worth $12,500. In 1922, 84 Amsterdam Avenue on the west side, 50 feet north of 63rd Street, a lot 25 by 100, with a five-story tenement, sold for $42,000. The building was assessed at $13,000, which would leave the land $29,000 for a standard lot 25 by 100. In 1922, the northeast corner of West End Avenue and 61st Street, 25 by 100, vacant, sold at foreclosure for $17,000. I did not give the foreclosure sale any consideration. In 1923, 92 Amsterdam Avenue, on the west side, 35 feet south of 64th Street, 25 by 100, with a five-story tenement, sold for $44,000. The building was assessed at $13,000, which left the land $31,000, showing a value of a standard lot 25 by 100. In 1923, 151 Amsterdam Avenue, on the west side, 50 feet south of 67th Street, 25 by 100, with a four-story tenement, sold for $42,500. The building was assessed at $8,000, which left the land $34,500, for a standard lot 25 by 100. Those are all the sales which I gave any consideration [fol. 1427] to. There was a sale of 61st Street, reported as vacant at such a price—and I am quite certain in my own mind that there was a garage erected on it at the time—it was such a price that I could not convince myself that there was still any vacant land at that figure. I think those were all the sales which I found that I could make anything out of; that is to say, that the statement of the recorded price was given. There are some other transactions—these are all the sales recorded in which the consideration would be indicated. There are a number of transfers in any section at any time that do not convey any information of the sale, and would appear to be transfers between interested parties. Family affairs, so to speak. I get that impression from the names themselves. John Smith to James Smith, for the purpose of illustration. And if there was no mortgage stated and no consideration, no recording stamps, you consider that they probably were transfers in among the interested parties. I mean to say that I looked over all the sales; I did not intend to pick out just such sales that

were favorable to me, but if I found things of that kind that I could not get and they did not convey any information, I discarded them.

The character of the development in the vicinity of Block 1157, Lot 1—on West End Avenue you have a good many garages and you have some manufacturing buildings and [fol. 1428] you have tenements. There are tenements in the streets. On 65th Street and on 66th Street there are old stables, and there are old small buildings and there are some—there is one five-story factory building; but the general development is such that I call it a tenement district, practically south of 65th Street, and so on, running down to 59th Street. There is some manufacturing on 59th Street, as well as tenements; some manufacturing on 60th Street. Running north after you pass 67th Street, it is pretty much all tenements. There is one block there, 68th Street, that has private stables on it. But it is mostly tenement. Going north of that you get up around the 70's and you have your private house neighborhoods again. There is a gas holder station on Block 1157, Lot 1. No office building there. Two corners on West End Avenue at $22,500 and two corners on Amsterdam Avenue at $40,000. I put the 25-foot frontage on Amsterdam Avenue. And those that I put in at $22,500, I fronted the lot—25 foot was on West End Avenue. The difference between my units there for the corners is because Amsterdam Avenue is a street of stores and business and the corner would have more values. You might use the little stores around on the street. Down on West End Avenue there is not much of a store proposition and you would consider that a lot down there, a corner lot, was only worth 50 per cent more than the inside lot. It is a difference as is represented by my figures. You could go and sell them at those figures. The sales that I have just given for Block 1157, Lot 1, apply to [fol. 1429] the valuation which I have given to Block 1157, Lot 21.

Speaking of Block 1177, Lot 21, I faced the two corners that I put in at $22,500 upon West End Avenue. I have given the same valuation for those two corners there as I did in the case of the two corners at $22,500, shown on Block 1157, Lot 1, and the same reasons apply there. Referring to Block 1670, Lot 1, and Block 1692, Lot 1, both ap-

ply to the 99th Street station. The same set of scales would apply to both lots. In 1920, 95th Street, south side, 202 feet east of First Avenue, runs south 201 feet 5 inches to 94th Street, by East 150 feet to proposed Marginal Street by north 175 feet, and again northeast 52 feet to 95th Street, by west 50 feet to beginning; vacant plot; sold for $40,000. That was in July, 1920. That plot comprises about eight lots. That would indicate a lot value there of $5,000. In 1920, 95th Street, southeast corner of First Avenue, 103 feet on 95th Street by 100 feet on First Avenue, with one-story brick garage; sold for $54,300. The building was assessed at $12,000, which would make the land $42,300, and would show a lot on First Avenue to be worth $9,000. In 1921, 438-442 East 104th Street, 100 feet west of Avenue A, 100 by 100, with one-story stables, sold for $24,000. The buildings were assessed for $600, practically nothing, which would show four lots at $6,000. In 1921, south side of 104th Street, 513 feet east of First Avenue, 100 by 100 feet 11 inches, with a one-story garage; sold for $56,000. The buildings had not been assessed, but such a building would [fol. 1430] be worth about $20,000, and that would leave for the land $36,000, which would be four lots at $9,000 each. In 1921, 428-432 East 105th Street, 75 by 100, with a one-story brick and frame stable; sold for $18,000. Building not assessed. Would indicate three lots at $6,000 each. In 1920, 416-426 East 105th Street, 175 feet west of Avenue A, 175 by 100, with a one-story frame shed and vacant, sold for $35,000. The building is not assessed. Seven lots at $5,000. In 1920, 420-428 East 108th Street, south side, 320 feet east of First Avenue, 125 by 100, one-story brick garages, sold for $50,000. The buildings were assessed at $12,000, which left the land $38,000, making five lots at $7,500 each. In 1920, 438-440 East 108th Street, southwest corner of Marginal Wharf or Street, 93 by 100 feet 11 inches, with a one-story frame building, sold for $22,000. The buildings were assessed at $3,000, which would indicate that the standard lot at that point would be $5,000. In June, 1923, 425-427 East 91st Street, 50 by 100, vacant, sold for $14,000; two lots at $7,000 each, 169 feet west of Avenue A. In December of 1923, 419-421 East 100th Street, north side, 322 feet east of First Avenue,—no I should not quote that. Omit that sale. It was a record which, when I came to

analyze it, did not mean anything. It runs north 201 feet 10 inches to 101st Street by west 100 feet by south 106 feet 10 inches, by west 57 feet 6 inches, by south 15 feet, by west 42 feet 6 inches to beginning; vacant, 100th Street Dock [fol. 1431] Company to East River Dock and Supply Company; bargain and sale, and recording stamps $25. This sale, when I came to look into it, did not seem to fit into anything that I could find right at that point. I do not think the property has been assessed for the purpose of taxation; not in just this land. I could not locate the property exactly according to these dimensions, so I was not certain what is covered, so I killed this for the moment. As a matter of fact, of course, there is about eight—nearly ten lots in there. It is not published here at all. It is not assessed here by these boundaries. It is a statement just as I have read it to you. That information that it had not been assessed for those boundaries is taken from the Record and Guide, and it is not assessed at all, the assessed valuation. The Record and Guide does not give the assessed valuation over that particular piece of property. It says, "Assessed blank." I saw that information that the Record and Guide does not give the assessed valuation; read it. I did not look at the assessed valuation of any property at all. I do not consider the assessed valuations; but I simply stated here that this particular thing, when I came to look at it, it did not mean anything to me. I should not have read this proposition. It should not have been included on this printed list here. Doing these things in a hurry, we sometimes get something inserted here that I should not even have given consideration to; but if you would like to have [fol. 1432] me now go through it, I will do so. That transaction is referred to or mentioned in the Record and Guide under date of December 27th and December 28th, 1923. The stamps on there said $25,000. It conveyed just that to me, $25,000. I did not examine the tax maps of the City of New York and the record of the city's valuation on that to enable me to determine as to whether or not I should use that sale as a guide in making up my valuation of this block. In 1919 I did look at a sale, the northeast corner of 96th Street. I think I told you that I confined myself to 1920. But I see that there was a sale picked up here in 1919, which I did consider, because it was the northeast

corner of 96th Street, and it was a vacant plot. It was 100 feet 11 inches by 168 feet in depth. It was sold for $49,500, and that indicated that a lot was worth $7,000 on First Avenue. I think that those are all of the sales that applied to inside land. There were some other sales that touched on the water front, which I considered. Of course, those would not apply to Block 1670, Lot 1, but they would apply to 1692, Lot 1. These were the sales that would affect the values of inside land, and that other piece was a piece of waterfront. The transaction of December 27th and the 28th, 1923 gave 100th Street Dock Company to East River Dock & Supply Company. In giving the list of sales which I took into consideration in my valuation of Block 1670, Lot 1, I have gone as far uptown as 108th Street.

[fol. 1433] I put all of these sales on one sheet on 108th Street because we have property up around 108th and 109th Streets to consider. So I put them all on that one list. There is not a great deal of difference in the values of lots around 96th, 97th, 98th and 99th Streets from what there is up around 108th Street and 110th Street. The Harlem Market property in 102nd Street probably is higher in value than it would be two blocks above it, because of the purposes for which the property there is used, but the land lying east of First Avenue, all the way up from 94th or 95th Street, up near 111th Street, is used for a variety of purposes and runs pretty much of a general character. You have the gas tanks here around 99th Street. You have the big power house and your car barns around 96th Street. You have you Harlem Market, which gave a certain special value to its immediate block, and then above that you have a conglomerate of small businesses, stone yards, garages, stables, some little lumber businesses, small chicken markets, stables, small coal yards—a combination of businesses, and the value of lots runs pretty much the same. There may be a little difference, a little more in one street than another, but not very much difference. The highest sale for lots on First Avenue is $9,000, I think. That sale justifies the unit that I have given for a lot on First Avenue of $10,000. Speaking of the sales that I gave they range in prices from as low as $5,000 a lot up to my highest $9,000 a lot. My [fol. 1434] units are higher than those sales, I think.

Speaking of Block 1670, Lot 1, I have two corners for

which I give 60 per cent additional, $20,000, and then below that, two corners, $16,000. I faced the corners for which I gave 60 per cent additional in each instance on the avenue, on Second Avenue and on First Avenue. The difference between $20,000 and $16,000 for those corners is 60 per cent additional. Two corners, 60 per cent over $12,500 made $20,000. You have got 60 per cent. You use a $10,000 unit on First Avenue, and there is 60 per cent additional, so there is 60 per cent used in each case. The unit is different, that is it. I think the character of the property changed since the sales were made. The sale on 94th and 95th Streets, that has been covered with a garage. That entire block, with the exception of the southeast corner of 95th Street and First Avenue had been vacant. Since that time the corner of 94th Street and First Avenue was leased by the Sage people of Albany, and that had a garage erected on it, and this piece that was sold, that I gave the record of the sale of, has been improved by the garage. I know both the properties well, because I tried to put them altogether once and get a plot on it, and the Sage people would not sell, and this man Menke would not sell for three times what this indicated sale is. Well, I know something of it, and that was done a matter of only four or five years ago.

In valuing Lot 1, Block 1670, if that were free and clear—if the gas company were off it, that whole block would prob-[fol. 1435] ably be devoted to tenements and stores. And devoting it to the use of stores and tenements I think that I would get the valuation that I have placed on it at least, and I would rather imagine, if the gas company were off there, I would get a great deal more, because these prices that you get in the sales near here are effected, in my opinion, by the gas company and the car barn. If both those things were out of there, I imagine we would get very much higher prices. The presence of the gas company unquestionably has a depressive effect upon real estate values in the immediate vicinity, and we always hear it when we go out and try to sell anything.

By the Master:

That generally affects all the property in the vicinity of all the gas house property, as far as the present condition

is concerned. Of course, gas houses are a nuisance in the neighborhood.

By Mr. Donnelly:

There is one thing I would like to explain right now and that is, in relation to that sale which I mentioned on 100th and 101st Street which I said was not assessed. I have talked with Mr. Dillingham of Rounds, Hatch, Dillingham & Debevoise, who represent the East River Dock & Supply Company, and also the 100th Street Dock Company, and the transaction between the East River Dock & Supply Company and the 100th Street Dock Company is an inter-company transaction. The property which was affected by that particular conveyance was part of a very large plot owned by the 100th Street Dock Company and it covered portions of several lots, and therefore had never been assessed in [fol. 1436] the shape of that transfer. The consideration was not a sale consideration. It merely represented the value agreed upon in the exchange between the two companies, both of whom are owned and controlled by the same people. The entire property comprised the block front on the East River fro m100th Street to 101st Street, running back 300 feet on 100th Street and nearly 400 feet on 101st Street, and this transaction covered portions of that. That large tract was not assessed as one parcel. There were a number of separate lots 25 by 100 lots, assessed in it. That was the reason why the transfer appeared in that way, and it had no effect on my mind in valuing the other property. I did not consider it.

The sales that I took into consideration in fixing my valuations of the several parcels which relate to the 111th Street Station, that is, Block 1682, Lots 8 and 11; Block 1683, Lot 18; Block 1704, Lot 5, and Block 1712, Lot 2, all applied. I think I have given all the sales in the matter of the 99th Street property up to—those sales I think I carried up as far as 108th Street. The only sales in addition to those would be a sale, 434 and 440 East 108th Street, the southwest corner of the Marginal or Wharf Street, or Pleasant Avenue, whatever you may call it, over in that section, 93 by 100 feet 11 inches, with a one-story frame building, sold for $22,000 in 1920. The building was as-

sessed at $3,000 and it would indicate that the lot at that point was worth $5,000. There is another sale. A sale in 1923 of 437 East 109th Street. It begins 420 feet east [fol. 1437] of First Avenue and runs to Pleasant Avenue, and it ran north 100 feet, and then ran west, an irregular dimension, and south 100 feet 10 inches, to the beginning, but the entire plot as taken from the map comprised a parcel 100 feet 11 inches by 193 feet in depth. It sold for $83,000 and it was stated that the consideration for the buildings on there should be $4,500. Analyzing that sale I obtain $8,000 for a lot on 109th Street and $10,000 for a lot on Pleasant Avenue or Marginal Street. That sale was in February, and in April; the deed passing along in April, 1923. Those are all the sales.

Directing your attention to Block 1682, Lots 8 and 11, I see those two corners in there at $16,000 each. I faced the corners on First Avenue. I don't think there would have been any difference in valuation if I had faced the corner on the crosstown street. It might have made a difference in the value of the corner but I would have worked out the other lots to make up the value.

On Block 1683, Lot 18, I have given the corner of First Avenue at $18,000. My reason for the difference in the two valuations there is I thought perhaps that lot coming opposite Jefferson Park there might be a little more valuable than the lot on the other side of the way, because it has Jefferson Park opposite, whereas the other two corners [fol. 1438] have not. I think First Avenue begins to get better up above 111th Street, 112th, 113th, 114th, 115th, it gets better. I know for a good many years we figured that land up on First Avenue above 114th Street was more valuable than it was at most of the places 15 or 20 blocks south of it. At least $2,000 a lot better. If this land were not occupied by the Consolidated Gas Company, I think the indicated use up there of the entire property would be probably tenements and we would get the prices that I have given for the land here, for that kind of development. Time was when we could sell lots not far from there, 1904, 1905, 1906, the period of developing the tenement houses, you could get $12,000 apiece for lots on those streets. As to whether 1904 or 1905 would be a safe guide for 1923 prices, I could not

dissociate my mind from the progress of values, the courses of values, and of development as I have watched them throughout the city. I would have to take all those things in my mind. When you ask me a hypothetical question as to what a piece would be worth if something was removed from the neighborhood, I would go back over the history of the section to sort of help me in forming a judgment. I do not lose sight of the fact that my judgment is hypothetical, too. Both things. Therefore I say that I would take—I would form my judgment on my past experience in appraising properties. I have appraised properties here from 1903 on, and when you ask me that question I would say that these would be tenement properties and that they would sell for at least the price that I put on them. To enable me to form my judgment of the values of these par- [fol. 1439] cels as of June 1, 1923, I would think back to the time when there was a good deal of vacant property around this neighborhood which was purchased for the purpose of building new law tenements. 1902, 1903, 1904, 1905 saw a very active period of building, in the neighborhood of 108th, 109th, 110th and 111th Streets and south of there of new law tenements, and good prices prevailed. Now, if you have got that land taken up with tenements and haven't the vacant land, you sort of have to guess back to the days when there was vacant land for sale, what they obtained for it for tenement uses. Most of the vacant land that could be used for tenements down there was taken up and used for tenement purposes. Of course, we have had a slump in the market since. We had a boom in 1903, 1904 and 1905 when prices were higher than they had been before, and higher than they have been since. In this particular section, I think they were higher in 1903 or 1904 than they have been since. If you will notice, I have not carried up the prices in my appraisal to the prices which I said did obtain in 1903 or 1904.

Referring to Block 1704, Lot 5, where I have put in two corners at $12,000 each, I faced those lots on Pleasant Avenue. My valuation would not have been any different had I faced them on the crosstown street. I used the same unit all the way around. I didn't think Pleasant Avenue at that point was any more valuable than the street. I gave [fol. 1440] the same units on Pleasant Avenue and 110th

and 111th Streets. By that I mean those streets have no greater real estate value,—one as compared with the other.

Referring to Block 1712, Lot 2, I have put in 209 feet of bulkhead at $200 a foot, as compared with $800 per linear foot for the bulkhead in Block 1089, Lot 1, and Block 1107, Lot 7. $200 in Block 1712 as compared with the $800 figure is the difference in the value of the waterfront. The things that make the difference in the value of those two respective pieces of bulkhead are the importance of water rights on the Hudson River around 42nd Street as compared with the uses of waterfront up here on the Harlem River, you have foreign steamship traffic over in the Hudson River which you don't have up in the Harlem River. This is local small boat usage. You can go and sell the land, and you can rent piers for high prices, you can get high prices for the land adjoining the North River at that point. The city will rent you piers and rent you bulkheads. They (the piers) are not always all rented. There are times when they come into the market for rent. I can't say at this precise moment the exact status of each and every pier, but I think if I wanted to go over and tie a boat up on the North River, I think I can tie it up now, this minute; I can get some privileges along some of the piers. There are a great many of the piers that are rented to the foreign steamship lines on long-term leases. The figure of $800 per linear [fol. 1441] foot for the bulkhead on the North River side is based upon the assumption that there is property available for use there. The city must have some of it that is available down below there now, where they took Piers 31 and 32. I know the city has paid $800 to $1,000 for bulkhead when they acquired it in the last two or three years. I think there was one instance—I can't quote that exactly, but there is one down in the neighborhood of Piers 4, 5, or 6, something in there, I think, within four years they have acquired, and paid over a thousand dollars a front foot in condemnation proceedings. If the prices paid in condemnation proceedings are the only thing you have to go by in fixing the value of property, you would have to consider it. You can't find sales from individual to individual along the North River front for many years past. If the city pays those prices under condemnation and assesses private own-

ers at that rate, it is some indication of the value of the bulkhead.

Referring to Block 1107, Lot 7, I gave you two sales of property below that of water front property, sales to the New York Central Railroad.

Speaking of Block 1642, Lot 33, I could not find a recent sale on Third Avenue at that point which would just apply to this property, so I appraised that property on my recollection of what these values were. I have appraised a good many properties at different times along Third Avenue in [fol. 1442] this section, and I fixed my value for that unit lot based on my past experience. It refers to my experience in appraising properties along Third Avenue at this point for over twenty years, attempted negotiations that I have made. I have never succeeded in closing a sale there. Brought the minds pretty close together, but never quite effected a sale. There are no recent sales in that neighborhood. Within this period I limited it, 1920, I did not find any sales of any kind, either sales that would or would not take into consideration. I am not certain whether there were any. I did not find any sales that I took into consideration. I think there were some transfers. This same block and lot I gave for the lot facing Third Avenue, the corner, 60 per cent. additional. If I had faced it on the crosstown street, the value of the corner lot with the length on Third Avenue would be greater than the value of the corner lot with the length of the street. I faced it on Third Avenue because that is the way it required. If you will note the diagram, the lot itself faces on there. Therefore I appraised it as is. It is only a single lot fronting on Third Avenue.

Referring to Block 998, Lots 50, 53, 54, 55 and 56, I took into consideration in making my valution of those lots sales in 1917. I am going back in this particular instance because this is a transaction of our own office, and a matter in which I was interested, and of course affected my judgment somewhat. We sold on the north side of 132nd Street, running through to the south side of 133rd Street, a frontage of 425 [fol. 1443] feet on 132nd Street and 400 feet on 133rd Street, thirty-three lots, we sold that property to the Fifth Avenue Coach Company for $297,000. Private sale. I speak of it because I advised on the matter of the price to be obtained before the sale was closed. I did not partici-

pate in the commission because of my arrangements in the office, but I was interested to that extent that I conferred with the salesman and with the sellers. That was not improved property. It was vacant, and it has been improved with the Fifth Avenue Coach Company's garage. The price was $297,000 for thirty-three lots at the rate of $9,000 per lot. And a sale in December, 1922, on 131st and 132nd Streets, a plot 175 feet frontage on each street and 200 feet through from street to street, sold for $167,000, by the Consolidated Gas Company to Studebaker and that is fourteen lots at almost $12,000 per lot. That was vacant property. It has since been improved by a Garage and service station. Those are the only sales. Those were quite close at hand and sufficiently satisfactory to help me form my judgment. I did not find any other sales.

As to the neighborhood in the vicinity of those plots, practically all the way down to Manhattan Street it is various kinds of rough business—garages, some manufacturing plants, garages and salerooms on Broadway, stoneyards and commission produce houses down on Twelfth Avenue. The sales that I took into consideration on those lots would like-
[fol. 1444] wise apply to Lot 1 of Block 1999.

Speaking of this block and lot, I gave for the corner of 132nd Street $18,000. That is a corner lot, facing Twelfth Avenue. I didn't face it on 132nd Street because I think 12th Avenue is the more valuable Street and naturally I fronted the corner there so as to get all the lots I could fronted on the valuable street. The unit for lots on Twelfth Avenue is $12,000, as compared with $10,000 for lots on 132nd Street and $8,000 for lots on 133rd Street. There is enough difference between 132nd and 133rd Street as, in my judgment, to justify an increase of $2,000 a lot in favor of lots on 132nd Street, on account of the difference in the grades of the street. The two streets are on different grades. 132nd Street has the better grade. That is an easier grade from Twelfth Avenue up to Broadway, and the hillside slopes from 132nd Street to 133rd, 134th and 135th Streets. There is more of a pitch to 133rd Street at this point, down on to Twelfth Avenue. You could travel over it, but if you were driving along there you would choose 132nd Street instead of 133rd. There is no difference be-

tween the two streets so far as the character of the business done along there is concerned. It is two hundred feet from 132nd to 133rd Street. We have blocks anywhere from 176 feet to about the longest from street to street is about 206 feet 6 inches, down at 13th and 14th Streets, and this is 199 feet 10 inches instead of 200, but it is close enough to say 200.

[fol. 1445] Go to Block 2108, Lot 8, in making my valuation there, I did not find a sale there that really helped me on that of recent date, and so I had to go back in there somewhat to the time when they were building those houses up in there, back in 1910, 1911 and 1912, and at that time they were getting from $12,000 to $15,000, sometimes $17,000 and $18,000 for lots from 155th Street up to 162nd Street in those different blocks, and I said that this was fair enough at $10,000 without any question, there could not be any difficulty about your ability to get $10,000 apiece for lots in here. They were getting those prices back in 1910, 1911 and 1912, when they were building quite a few houses up in this section. I would not call it a boom, but was quite a little building activity up around in there. The neighborhood above 155th Street up to 161st Street is generally a tenement neighborhood up in there. Over here at 159th Street we are as far west as St. Nicholas Ave. at least, east of Amsterdam Ave., up here. I did not find any sales. I would not say there were not any transfers in that neighborhood as far back as 1920, but I did not find any sales that I could give any consideration to.

Block 2497, L to 132, takes in the entire block bounded by Cromwell Avenue, 157th Street, East 157th Street, and the New York Central & Hudson River Railroad right of way. It was vacant land. I think that was all solid land. I think it was upland, anyhow. I think originally it was good solid upland, no swamp land that had been filled. I think none of it was moist. I looked it all over in 1912, and gave it a look at once again about 1922 or 1923, and did not [fol. 1446] look at it before I came here this time. As to how far away the plot is from Cromwells Creek before it was filled in—Cromwells Creek has been pretty well filled up, and there is not very much left of Cromwells Creek. Practically all there is is a little bit of a basin alongside of McComb's Dam Bridge, right at the end of the public

park and playground there. There isn't very much left of Cromwells Creek. I haven't the exact boundaries in there. It was some little distance north and west. Cromwells Creek wound around over towards Jerome Avenue, and went up along, I think, what is now Featherbed Lane. There was a little of that Cromwells Brook or Creek all along there. It was some little distance away from this plot. It has not been over here for a good many years, I will say that. I think some of the land in Cromwells Creek belonged to the Astor Estate. It did not all of it; not all of it; some of Cromwells Creek ran through some of the old Morris property if you want to go back to those days. The Astors have held theirs, and the other people have sold their land along Cromwells Creek, and it has been filled up by other people than the original owners. Our office sold this piece after the gas company's officers had looked all over the lower part of the Bronx and I said the price they obtained was the price this was worth, in 1923. I did not bother to look up anything else. I said that this property sold for a consideration as of the time of which we are fixing value, and at that price it was a fair sale, I could not get any better criterion of its value than $200,000. There were [fol. 1447] no sales right in here. There were sales—of course, the American League Park ground had been acquired. I mean the Yankee Stadium. But the sales right in this immediate vicinity, apart from that, I do not think you will find any sales. I have a memorandum of the sale of the land included in the Yankee Stadium. As to whether the price at which that land was sold was a safe criterion for valuing this parcel, I did not consider it at all, because here was a sale which we knew had been made at the time as of which we were valuing, and I said that is the value of the property, I knew the circumstances surrounding it, that our salesmen had been all over the lower part of the Bronx, that I have probably passed on 20 different locations and quoted opinions of value, and that they finally picked this piece out as the one best suited to them, and therefore they could not have been classified as forced buyers, and the Astor people agreed to sell for that price. I could not find anything better to establish what was a fair value as agreed upon between a willing buyer and a willing seller. I did look to see if there were any other sales there besides this

transaction. The only sale that I found, as I told you, that might really approach this, was the sale of the American League Park, and I did not really consider it because that might have established some higher values than I gave. I believe the sale of the land included in the Yankee Stadium also included some streets that were closed, sold in connection with an agreement that the city would close [fol. 1448] some of the streets. Since 1920, down to June, 1923, and for two or three months subsequent to June, 1923, I think there were no sales of any vacant property in the vicinity of Block 2497 within that period. That property belonged to the Astor Estate, both branches, and to the Morris Estate down to 150th Street, and they preferred to lease their land rather than sell it, and so you have no sales in that particular spot. This lot was purchased all in one parcel from the Vincent Astor Estate. The New York Central & Hudson River Railroad tracks with reference to this parcel are southwest. The right-of-way runs right up against the property. It this case the presence of the New York Central and Hudson River Railroad tracks there did not form one of the factors in my mind in making up the valuations. I will say that the actual act of this sale is what governs me in putting this price on. I assumed that they purchased it for the purpose of establishing a garage and supply station in here and being a point which was particularly well located for the carrying on of their business. From here the various points at which they had to give service, speeding their various repair wagons and the repair men to the various parts of the City of New York, particularly the upper parts of the City of New York, were best suited by being right in this location. The distances that would be covered by different repair gangs sent out, when a radius of their operations was established and then it was centered, it was found to be that this was about the central spot for them to locate in. I don't know any- [fol. 1449] thing about repair gangs that would be sent out in connection with the work of the gas companies affiliated with the Consolidated rather than with the needs of the Consolidated Gas Company itself; all I know is that I talked with Mr. Addicks personally about this, and I at one time took a city map that he had marked out, and we studied distances, laid them out with a scale and rule, and

one thing and another, and we arrived at the fact that right about here was the point that offered them the best location for the purpose that they wanted to use the land. McComb's Dam Bridge goes to the Borough of Manhattan. That was their opinion, that this was the location that they wanted. They could have bought some other land within the same radius that had about the same usefulness, but it would have cost them two or three times as much, up in Mott Avenue and 138th Street, the property belonging to August Belmont, which I showed them and which they had under consideration. When I speak of repair gangs I have in mind repair gangs doing work all over Manhattan and the Bronx. I am sure that the Consolidated Gas Company's expert on that matter said this is well located as a point from which repair gangs doing work down around Broadway and Canal Street could depart, and I will take his word. I am not familiar with the gas company's business. It is a fact that those factors are the factors which determined the Consolidated Gas Company in paying the price that they did pay for that plot. They wanted the location. Probably if I had sold them better land in some [fol. 1450] other place that was not as convenient, they would not have bought it at all. Switches could be run into the property from the railroad if they wanted to do that. They could make an agreement with the railroad to run in the spur or the switch. What I mean is, it is a physical possibility to get a railroad siding in here. The railroad tracks are so situated with reference to the plot itself that it is a physical possibility to make a spur with the railroad on to the plot.

Speaking of Block 2497, I did not divide it up into lots for the purpose of getting at the total appraisal that I gave for the entire parcel. I had no unit lot value there nor did I consider any unit lot value on any of the streets by which the plot is bounded.

By Mr. Chamberlain:

I have not any idea of the fact that the plot was assessed at $7,000 in 1923 and 1924. I appraised it for a good deal more than that in 1912, though. I could say that, for transfer tax purposes on the Astor Estate.

By Mr. Donnelly:

The office of Joseph P. Day was a broker in the transaction and sold it for $200,000 in 1923, and my appraisal here is $200,000. The sale itself, in my opinion, was the very best evidence I could get, because it was sold at about that time. I visited this property for the purpose of making the appraisal last Saturday afternoon. I looked it over several times in previous years, but the last time I was there was last Saturday afternoon. Mr. Aldrich was with me. [fol. 1451] I have known the property for some time. I was asked at one time to put some figures on Sedgwick Avenue lots, part of this property. I have forgotten now just when that occurred. I have been up in there and looked at that on two or three occasions. Some question or other being asked me about this particular property. I have been up on that property. I have been up on the surrounding property at various times. I am perfectly familiar with the physical character of the ground. Except that I make a point of seeing land before I give any testimony about it, I could probably sit right in the office and describe this particular thing. In 1917, we have a sale at the northeast corner of West Fordham Road and Cedar Avenue, which is the block south of the south line of this Gas Company's property, 44 feet 6 inches on Cedar Avenue, 76 feet 7 inches on Fordham Road, and 62 feet 4 inches on the rear line—a triangular piece. It sold for $7,250. No improvements,—vacant. In 1917 we had the sale of the southwest corner of Fordham Road and Cedar Avenue, a plot fronting 30 feet 9 inches on West Fordham Road, 135 feet on Cedar Avenue, the south line being 25 feet and the west line 117 feet 10 inches. Vacant property. That sold for $3,700. In 1917 a plot on the south side of West Fordham Road, beginning about 30 feet east of Harlem River Terrace, fronting 116 feet 7 inches on Fordham Road, being 112 feet 2 inches in depth on the west line, 166 feet 11 inches in depth on the east line and 75 feet in width at the rear. Sold for $10,000. Vacant. In 1920, a parcel on [fol. 1452] Harlem River Terrace, 292 feet 7 inches south of West Fordham Road, having a frontage of 200 feet on Harlem River Terrace and a depth of 100 feet at each side,

sold for $15,000. Vacant land. In 1917 a plot on Cedar Avenue, west side, 829 feet 7 inches south of West Fordham Road, 25 feet wide in front, 100 feet in depth on the north line, 75 feet wide on the rear line, and the south line irregular, sold for $1,350. Vacant. These are all vacant properties that I am going to quote. In 1917 a plot on the west side of Cedar Avenue, 179 feet 6 inches south of West Fordham Road, 50 feet wide in front and 100 feet deep, sold for $2,350. That was a vacant plot. In 1917 a plot on the west side of Cedar Avenue, 679 feet 7 inches south of West Fordham Road, size 50 feet by 100, vacant, sold for $1,400. In 1917 the northeast corner of Cedar Avenue and 182nd Street, 25 by 100, vacant, sold for $1,450. 182nd Street is about 240 or 250 feet south of West Fordham Road. It is not much of a street. It is one of those streets that run up a side hill and you climb up steps. South of West Fordham Road you strike 182nd. Owing to the topography of the land over there you have got somewhat peculiar angles to streets, going down Cedar Avenue. In 1922 the southwest corner of Sedgwick Avenue and Fordham Road, an irregular plot, fronting 75 feet on Sedgwick Avenue, 25 feet 5 inches on the little open square formed at the junction of Fordham Road and Sedgwick Avenue, with 83 feet on Fordham Road and then there is 6 feet more on Fordham Road owing to a break in the angle of the street, and 83 feet across the south line; sold for $13,800. [fol. 1453] Vacant land. In 1923 a plot on the west side of Sedgwick Avenue, about 360 feet south of Kingsbridge Road, size 100 by 100, vacant, sold for $11,000. Sedgwick Avenue, passing West Fordham Road and running along the line of the Gas Company's property, just north of the line of the Gas Company's property, swings again toward the east, and at that point Bailey Avenue runs off from Sedgwick Avenue, running in a generally northerly direction and parallel with the lines of the Central Railroad tracks going up to 231st Street, and then that swings a little to the east and comes back and hits Sedgwick Avenue again, and in between that junction of Bailey Avenue and Sedgwick Avenue, near the Gas Company's property, there is Heath Avenue, which swings off from Bailey Avenue, and Kingsbridge Terrace, which swings off from Bailey Avenue

towards Kingsbridge Road, in a measure paralleling Sedgwick Avenue. Now, all those properties mentioned have the aspect of being on side hills. Some of them are very steep grades. Some of them are not so steep grades. I found no sales in 1918, 1919 or 1921. These were all the sales I found. There was one sale on Harlem River Terrace, one sale at the corner of Sedgwick Avenue and West Fordham Road; and the sale on Sedgwick Avenue south of Kingsbridge Road was in 1923. Right: two sales in 1923, one in 1922, one in 1920, and the others in 1917. I have not the date when in 1923 that sale on the west side of Sedgwick Avenue, 350 feet south of Kingsbridge Road was made. It was about June, is my recollection of it. As [fol. 1454] to the other sale, I think one of those was in February. They were all near enough to be considered as 1923 sales. The property sold on the Harlem River Terrace was turned into use for public garages. The westerly line of this property is on Harlem River Terrace. The railroad tracks with reference to the westerly line of the property are across the street, about sixty feet across.

In the statement that was incorporated as part of my direct examination and in which I gave some comments in relation to this Block 3236, that is the use to which I thought the property could be devoted. Fordham Landing Road runs east and west on a steep grade, curving northeasterly to run into Sedgwick Avenue. I think that grade coming up from Harlem River Terrace to Sedgwick Avenue is a very steep grade of such character as to interfere with traffic along Fordham Land Road. The people using the street to get up from Harlem River Terrace as a rule go further along Harlem River Terrace to the West Fordham Road and come up West Fordham Road, the grade being much easier. That is a hard grade, but, of course, it is not nearly as steep a grade as Fordham Landing Road. I would get to Sedgwick Avenue from Harlem River Terrace by swinging right out from Harlem River Terrace to West Fordham Avenue at the bridge and swing in there and come up West Fordham Avenue to Sedgwick Avenue, which crosses West Fordham Road. There is a great deal of traffic going across and west of West Fordham Road from Harlem River Terrace. There is a block in between. The

[fol. 1455] southerly end of the property is on the Fordham Landing Road. It is about 300 feet from the West Fordham Road. If you care to look at this, Counselor, this is not an accurate sketch, but I would be glad to have you both see it (showing sketch to counsel). As far as that is concerned, that is the Landing Road and that is West Fordham Road (indicating). That will give you a little relative idea.

Look at sheet No. 19 of Plaintiff's Exhibit 258, which shows Block 3236, West Fordham Road continues down there (indicating), West 184th Street. The name of the street right south of the southerly end of the block is Landing Road. I believe it is just stated on the maps as Landing Road, not Fordham Landing Road. As you come up Harlem River Terrace to Landing Road, the grade of Harlem River Terrace is not so steep as to make it impracticable for traffic there. Harlem River Terrace is practically on grade, with reference to the Landing Road and with the foot of the hill. It runs along the foot of the hill, so that a motor truck coming up there could easily get on the Landing Road. It would not proceed along the Landing Road. It would go further along the Terrace (indicating on map). That goes down like that, and this is West Fordham Road. This should be West Fordham Road (indicating). West Fordham Road runs down to 207th Street [fol. 1456] Bridge, and Harlem River Terrace runs along parallel with the railroad and by very easy grade gets up on to the West Fordham Road at the entrance of the 207th Street Bridge. West Fordham Road is a fairly steep grade, but it is nothing like the sharp grade that is on the Landing Road. It is negotiable with motor trucks and wagons, and there is a good, steady traffic over it all the time, east and west. 207th Street Bridge makes an outlet for that portion of the Bronx which we term Fordham, across the Harlem River into the Dyckman section of Manhattan, and into the 207th Street station of the subway. As to the character of the development on the easterly side of Sedgwick Avenue facing this block, you have the Webb Shipbuilders' Home. North of that has been developed very considerably with one and two-family frame and brick and stucco houses. Not much apartment house

development on Sedgwick Avenue. Up by Kingsbridge Road there has been some apartment house development. Kingsbridge Road I imagine from along the Harlem Terrace must be something like 2,500 to 3,000 feet north of West Fordham Road. Going along Sedgwick Avenue from West Fordham Road to Kingsbridge Road the distance would not be the same, because West Fordham Road runs northeast and southwest and Kingsbridge Road runs southeast and southwest. Eventually, if they kept on, they would converge at somewhere about Jerome Avenue. When they hit Sedgwick Avenue, why, they both turn east and so they do not come together until finally Kingsbridge Road winds [fol. 1457] around after it crosses the Grand Concourse and comes out into Fordham Road just west of Webster Avenue. And this property of the gas company's is not a great distance from University Avenue. When you get at the junction of University Avenue and Fordham Road you can look right over and see this gas tank. I presume it is 1,000, 1,200, 1,500 feet; maybe more. I think that we would develop the Sedgwick Avenue front of this plot with tenements. That is what would be done with it, supposing that we were going to develop it at all. When I say, "tenements"—anything that is a multiple family house becomes a tenement. I am speaking in the technical language of the Tenement House Bureau. I do not mean to imply by the word "Tenement" an inferior grade of building; merely a multi-family house.

Speaking of the portion where the gas holder stands as having been leveled off and north of the gas holder, I noticed there were tennis courts which face the Harlem River Terrace. And then running back from the Harlem River Terrace apparently it would be 250 feet, and at the extreme end back from Harlem River Terrace, that is where the slope begins up to the Sedgwick Avenue front. Then between that distance and the Sedgwick Avenue front itself, I have not measured it. I should think it was something like half way across the plot. I have not laid a scale on this diagram. Of course, the slope varies a little. You have got a curved line on Sedgwick Avenue, but that is a [fol. 1458] near enough guess, I should say—half way. The property up at the upper end of the plot appears to be

230.46 feet in depth running from Bailey Avenue over to the Harlem River Terrace, and it remains about that width until you get quite some distance south. From my observation, I would say, taking an average of that property where the tennis courts run along, it covered maybe about half; perhaps it is a little more than half. It is my impression that the tennis courts run about 200 feet back. They do not take right up here to Bailey Avenue, the tennis courts. It would be physically possible to run a spur or a switch from the railroad track back to the plaintiff's property. I think it could be done very easily.

By the Master:

I mean, the physical relation of this land to the railroad tracks would make crossing the Harlem River Terrace a very easy thing to do.

By Mr. Donnelly:

The land on Harlem River Terrace is suitable for most any kind of business,—manufacturing or storage, warehouses, commercial business, all rough lines, garages, anything of that sort.

Referring to those sales in conjunction with this plot as were located down on Cedar Avenue, it is steep hillside property, but I don't think it is as steep as the property where the holder is. That is, on Cedar Avenue, those are steep hillside lots. Sedgwick Avenue lots 100 by 100 is a hillside plot. That slopes from Sedgwick Avenue down to Heath Avenue, with very deep retaining walls. In parts, [fol. 1459] particularly up near Kingsbridge Road, they have deep retaining walls both on Sedgwick Avenue and on Heath Avenue and on Kingsbridge Road. As you get down towards Bailey Avenue the retaining walls are not so deep. Speaking of those precipitous lots, there is quite a drop in the rear facing the Harlem River Terrace.

By the Master:

I have given my estimate of $25,000 for that property, (The Kingsbridge tracts), regarding it as all of equal value, for the purpose of making the appraisal. Of course, there

would be portions of a plot like that that would bring possibly higher values than others, but taking the entire holding it does not, in my opinion, lend itself so well to breaking up into integral parts as it would for some large use as a whole. When I was up there examining the property, I observed that there was a steel wire fence surrounding the holder proper, as I may call it. I don't know that it goes all the way across the property. There is a wire fence that I noticed. As to how much of the entire parcel lies north of that wire fence, I don't know as I have given that any consideration. Just as a guess I would think half, but that might be an error, because at the holder is the greatest width from the Harlem River Terrace to Sedgwick Avenue. At the north end of the property you get a pretty general slope down to the Harlem River Terrace. At the south end of the property, say, almost back of the gas tank or holder, I imagine that slope originally was wider than it was at the northerly end, because that has been cut out some to make a place for the gas holder. It is at that point about where the curve in the Landing Road comes that there [fol. 1460] is a little wider ledge of possibly usable land, west of Sedgwick Avenue. It comes right back to the gas holder. Sedgwick Avenue and this West Fordham Road and the Landing Road all come in there at an open place. Take that curve around Landing Road, about up to the widest point of this property, where West Fordham Road again turns east along generally in that section there is a shelf of land, and it shows some rock formation as if it might be rock ledge cropping out there twenty to thirty feet below the level of Sedgwick Avenue, and then running level perhaps, in the absence of a survey, I would say seventy-five to one hundred feet of varying widths, as it curves around there. I think there is a little space there where you would not have to go down to the level of Harlem Terrace with your foundations. I think there is supporting ground there for a foundation. I don't believe that I could say which was the more valuable, the north or the south end of the lot. There might be certain uses that would suggest themselves for one portion and certain uses that might suggest themselves for the other and I am not prepared, to state. I spread the value, of course, over this entire property because of its peculiar situation and the

topography of the land, that someone might possibly buy that and make some development out of it in a certain way. There are certain little portions that might have particular value for some purpose and yet if the other portions were [fol. 1461] used for another purpose that might have a detrimental effect on the portion that I thought valuable. Supposing that property north of the fence was sold as one parcel, I think probably the use that would be made of it would be to go back in there as far as they could and use the Harlem River Terrace front for business, and go back just as far as they could and allow Sedgwick Avenue to remain in its present relative position. I am not prepared to say what would be the value of that north parcel; not having the area. It would take the Harlem River Terrace value for manufacturing, but if I was to say now, I will say it is worth the price I have said, $25,000 per acre.

By Mr. Donnelly:

I am not able to say what proportion of the entire plot is actually occupied by the holder and the pumping station.

The sales that I used in making up my valuation for the plots and lots that are included in the so-called Hunts Point tract are, viz: Blocks 2770, 2775-E, 2775-F, 2775-G, 2775-H, 2776, 2777-J, 2778, 2780 and 2781. I have not separated those. I simply considered this tract as shown on the exhibits here. I considered first the sales made by Joseph P. Day at auction which I took into consideration in making up my appraisal. Public auction, in November, 1919, the property which adjoins the property in question, the property lying to the west of Halleck Street, which was sold to the Robert Dollar Steamship Company. We sold 14.3 acres of land with possible rights between the bulkhead line, whatever rights there were between the bulkhead and [fol. 1462] pierhead line, for the sum of $250,000. Vacant property. That is about $18,000 per acre. I figured that this sale at public auction was a safe guide there. It was not a particular satisfactory price to the owners of the property. At the time we offered six other plots which were bid in by the owners at about $18,000 per acre. I was at the sale which was conducted down here in Vesey Street. It was not sold as one tract. They divided it into parcels

of various size acreage, of from 6 acres to 10 or 12 acres. That property was not all bulkheaded. There was a portion of it that was partly bulkheaded, a bulkhead in course of construction north and east of Hunts Point Road. To the south of Hunts Point Road there was a substantial concrete bulkhead following the bulkhead line as established by the City and the United States Government, around into Causeway Creek. It was a substantially finished job at that time. North of Hunts Point Road they put in foundations and placed some protective piling outside. The concrete work was never done on that, but they were intending to do the entire river front with that concrete bulkhead, but they didn't get a price that was satisfactory to them, they let the first piece go to the Dollar Steamship Company, and then they bid in the rest of it themselves. It was not satisfactory. Some of that land that Mr. Day sold at public auction was filled in land. A great deal of that is good solid natural upland, but there is a considerable portion of it that is filled in. There has been no use made of [fol. 1463] the property. Of course, during the war time and after the war, there were a lot of vessels tied up around there. I mean to say for any continuous purpose or distinctive purpose it has not been used. There has been some, I don't think there has been much repair work, or much work done on the bulkhead. There has been some little work to keep it up. The land itself remains in much the same condition as it did at that time.

Our office also sold the Simpson tract, a potrion of which is included in this property, that is, the property that is under examination here. The property at the northeast corner of the Simpson tract, with frontage out on the Bronx River. Our office held that Public auction sale in 1922. The tract was divided up into lots and sold as lots. The Simpson tract was not bulkheaded and filled in,—well, it had been filled to some extent. It remained in its natural state as regards the waterfront. It was waterfront property, on the Bronx River. I don't know just how many acres there were in the entire Simpson tract, but it was quite a large tract of land. There was property which is not included in this present parcel. There was something over 500 lots that were sold at that time. There were no regularly laid out streets running through the Simpson

tract. There had been no physical work done on them. On Ryawa Avenue we had a plough run along the line, and a scraper and scraped in a road, and then we put up some fence posts at the corner and stuck up some signs to indicate where the lots could be found. The lots sold at [fol. 1464] that auction sold for: $100, $200, $300, $150, $140, $350, $400 and a couple at $450. That is about the range of them. That sale was conducted by Mr. Day personally. No improvements there.

By the Master:

I cannot tell you what it amounted to by the acre, the aggregate of the sale and the acreage. I never did find out what that was. I was only interested in the fact that a friend of mine purchased all of these lots that are included in this particular tract of land, (the new plant of the plaintiff), in order to square out a line on East Bay Avenue, taking in practically all the waterfront. He bought all of that land that would be on the waterfront, and then bought all of the land lying east of East Bay Avenue. That is really south of East Bay Avenue—that adjoined the Bronx terminal tract so that this could be absorbed into one large parcel.

By Mr. Donelley:

The Simpson tract has not been developed since the time of that auction sale. It has remained just about in the same condition. No streets run through there either, only sewers. The City has not done anything to it since the auction sale. There are 17 lots in an acre in the row, and when they are divided and streets are cut out an acre of land makes 12 lots, 25 by 100. I would not regard that Simpson tract auction sale as a fair guide. I appraised the land in there in its raw state for a much higher price than it brought ten years ago, so I say, I do not consider that it has brought its fair and full value, but there is the sale value. I had to consider it, we made it, and I could not refuse to consider something [fol. 1465] that my office had done. In making up my valuation of this Hunts Point tract. Other sales, we sold the Dickey Estate property, we sold the Garrison Land Company, we sold the Morgenthau Syndicate property,

all of which properties—two of them touched on the Bronx River. I don't know that the Garrison Company did have a real piece of frontage down on the river, the East River. They came down to that corner of Tiffany Street. Those were all auction sales, and all sold as lots. Those sales go from 1908 to 1922. 1922 was this Simpson sale. We had a sale of lots of the East Bay Land Company, 1923, and the Morgenthau sale was back about 1908, the Dickey sale 1921 and the Garrison sale was about 1908. They all being transactions by our office, and I having looked at each and every property at some time or other and expressed an opinion about what the lots would bring, they would naturally be in my mind, and it would certainly go to qualify me as having had some experience in the neighborhood. The size of the tract involved in the Dickey sale in 1921 was something like 40 or 50 acres. Some of that was waterfront; on the Bronx River. That was divided up, into lots and then some larger plots. By larger plots I mean plots that were more than the standard 25 by 100 lots, some plots I suppose had 10 or 15 lots included in them, irregular shapes, and extra depths and one thing and another. They were not all waterfront properties. I think the larger parcels they tried to put on the waterfront, and then some property back of the waterfront they divided into larger plots. There is a certain amount of [fol. 1466] marsh land along the waterfront, and then there was the proposed Edgewater Road through there, and some large tracts in there. There was some marsh land included in that Dickey tract that was sold; quite a big amount.

[fol. 1467] New York, May 1, 1924.

Met pursuant to adjournment.

Robert Huntley, a witness in behalf of the plaintiff, resumed the stand.

Cross-examination continued by Mr. Donnelly:

I haven't the total amount that was realized from the sale of the Simpson tract. Regarding the prices brought for a few individual lots, I will say about that, I was only

interested in the matter of the Simpson Estate for the purpose of seeing what certain portions of the property which were required by the Gas Company cost. For the part that was acquired by the Gas Company there was $102,320 paid; that is, this part that is included in this big holding of the Gas Company which is shown on the exhibits here. That was what was paid for it at the time the Simpson Estate sold it. I used the Simpson -state sale as one of the sales as a matter of showing my familiarity with the neighborhood. The Simpson Estate sale, the only consideration I would give to that is the fact that I knew that the Simpson people had been offered very large prices for this property and refused them, and when they suddenly decided they wanted to get rid of it, they put it out at auction; that is all. They could have sold it at one time—to my own knowledge, they could have sold it for $10,000 an acre, right just raw as it was. They refused to take it. The sale of the Simpson tract was not one of the sales which guided me in making up the valuation which we placed upon this Hunts Point tract. The Dickey Estate sale was not one of those sales. I took as guides in making up my valuation of this Hunts Point tract sales of waterfront all around New York Harbor with which I am familiar; all the way from Staten Island Sound up the Hudson River out to New Creek, all along the Brooklyn Shore, and along the Flushing Bay [fol. 1468] Shore, and all the properties that I know of along the waterfront around the City. It is my experience in appraising and the matter of sales of waterfront of which I know, and the conditions surrounding the waterfront, the conditions surrounding the demand for waterfront property with which I am familiar, that form the basis for my appraisal of the value of this particular property. There were not any sales of property similarly situated in the neighborhood of this Hunts Point tract which I examined and which I concluded to take as guides in making up my valuation of the Hunts Point tract. Other than the Dollar Steamship sale, no, not at that precise time, I knew that we had sold waterfront property at Mott Haven, with bulkhead. All this stuff, in my opinion, is a basis for the valuation of waterfront property. The question of acquiring a large tract of water front property with deep water is a problem that comes up in our office and on which I am consulted and have been consulted for the past ten or

fifteen years. I profess to know pretty much all the waterfront properties and the prices of property anywhere around New York Harbor. Frequently testified to that effect, and it is on that experience that I would base my value, rather than on any immediately contiguous sales which were sold in small parcels. The Mott Haven property is down at the East River and 135th Street and 136th Streets, and there was a sale at 140th Street. I also have the Church E. Gates property for sale, have been over it and advised on it. It is just south of Tiffany Street. It is perhaps half a mile northwest of East Bay Avenue. There have not been any sales of waterfront property at [fol. 1469] this Hunts Point tract because the only land that lies in there is a piece that belongs to the Rockland Rockport Lime Company, that is not it, it is the Rockland Lime Company, I think; and the next piece is the Church E. Gates property, and those were both acquired a good many years ago. Now, that takes you up to the New York, New Haven & Hartford Railroads Yards. When you go down south of that, the first sale you find is one that was made, the next sale, I think, was made in 1918, at 140th Street and the East River, an old stone yard that was sold there. Then the next sale later than that was a gathering together of the land on which the New York Edison plant is now erected, and part of the gas company, and those ran out from Walnut Avenue out to the river. Of those three sales in Mott Haven, the average price was over a dollar a square foot. That is over $40,000 per acre. Those were made in 1918, 1920, 1921, I think, was the last of those, during some part of the period of the war. The latest sales of waterfront that we have made over on the Jersey shore, waterfront, are higher than they have ever been known. The Vacuum Oil Company property is between the Warner Sugar Factory and the Aluminum Plant. They call that Edgewater. Now that, looking across the river, would be somewhere opposite 80th Street, I think; right near there. I regard the sale of waterfront property there as a guide to making up a valuation on this Hunts Point tract. Waterfront property depends upon the depth of water, its nearness to labor markets, its trucking facilities, and the character of the land, and by that I mean the question of whether it is solid upland or whether it is marsh land and has to be filled and bulkheaded. All those things

enter into the question of the values of waterfront. First [fol. 1470] of all its situation with reference to water communication is one of the factors; the backing of the property; what is back of it; if there is a labor market within easy reach; if the roads are easy to truck over, so that you might serve a large territory; what the character of the ground is—the physical characteristic of the ground; can it be used for development; will it carry weights; would it be necessary to spile; would you have to fill; all these things would enter into the question of value of waterfront. Possibilities of rail connection, of course, would enter into it. Railroad facilities oftentimes are the deciding factor in the value of waterfront, and when you are dealing with large pieces of waterfront they are a very hard matter to get. If you wanted a large piece of waterfron- property today, you might hunt all over this harbor to get anything that would suit you. I went all over this Hunts Point tract for the purpose of making my valuation, about three years ago, the land of the East Bay Land Company, which lies to the northwest of this and adjoining the property of the Bronx Terminal holdings, I examined this property for the purpose of trying, and there is another piece of property breaks in through the East Bay Land Company's property and belongs to a man named Pizer. I tried to put them all together and tried to get Robert Dollar to put a price on his for a big lumber company out in Dakota. I examined it particularly last Saturday to refresh my memory in order to testify. Beginning at the extension of Farragut street out to the East River is bulkheaded, running along the East River. There is 350 feet of bulkhead there. [fol. 1471] Then the bulkhead turns into the north 410 feet, and then there is 541.81 feet. Then it turns around the corner, and I should say that it went up there about 150 feet. The bulkhead had been carried on further. There is not very much left in there. Part of that bulkhead was broken out of the westerly end of the bulkheads. It takes nearly all of it off the Dollar Steamship land, and a little off the Gas Company. Originally that was bulkheaded all the way up to Causeway Creek, and then around on the other side taking north of Hunts Point Avenue out all along the East River there is the preparatory spilling work with the riprap and the piles capped for the purpose of the erection of a concrete bulkhead. The foundation is all pre-

pared there for—well, 1,950 feet. It is prepared along the entire length of that East River front, part of this tract faces on the Bronx River, fronts around on the Bronx River, I did not see any spiling or bulkheading in there. That is a rock face on the slope to hold the fill. 2,150 feet of the tract shows on the diagram that fronts on the Bronx River. All of that has a Bronx River frontage. The land fronting on the Bronx River is all filled with the exception of a cove to the north and east of East Bay Avenue. That is the only marsh land that I saw there. I did not see any moist land. There is a good deal of filled in land there. The filled in land appears over at the Bronx River front and the filled in land appears on the East River front along the line of the south and east of the Causeway Creek; south and east of the Dollar Steamship Company's land. [fol. 1472] At high tide the Bronx River does not overflow and come over on this land. Hunts Point Avenue is a dirt road. It is a paved road down to Randall Avenue. From there on it is a dirt road and has been graded. It is on a grade. Farragut Street, as shown on this diagram, Plaintiff's Ex. 258, I think was graded at one time but has been neglected, and it now gives the appearance of just having been cut through and left there. It is below the level of the abutting property, a few feet. It might be as much as six feet, I did not measure it. It appeared to me to be below the grade of the surrounding, that was a little high land there then, cutting down to the waterfront. I presume that is the established grade of the street. It looked to me as if it were. I did not bother much about it. I don't know if there is a sewer in Farragut Street. I think the sewer mark is off to the south and westward. No, I did not notice any visible evidence of its being sewered. I noticed there was a Hunts Point sewer down there, and I did not pay any particular attention to the street, whether it was sewered or not. On Hunts Point Avenue there is the main trunk line sewer. That is called the Hunts Point sewer, and whether it is right in the bed of Hunts Point I do not know, I did not care particularly. There was a sewer down there. I know that for twenty years. I think Halleck Street as shown on Plaintiffs' Ex. 258 is not made at all. It is a mere paper street. That and East of Hunts Point Avenue are streets. I did not see any traveled roadway across that street. They are

doing some filling out to the west and south of the junction of Hunts Point Avenue and East Bay Avenue. There is some filling being done. I do not know who is doing the filling. I did not bother. I just noticed the fact that there was dumping being done out there, the filling in. I knew [fol. 1473] that the East Bay Land Company was having some filling done, and I knew that Dollar was having some filling done, and I knew at one time that this land was being filled up by the Bronx Terminal people, that they were having it filled. I only looked at the property to see the condition it was in. I do not know what is to be the grade of Halleck Street. East Bay Avenue is not regulated and graded. It is not cut through East of Hunts Point Avenue. I did not see any dirt road there. I did not make any inquiry to find out what the grade of that street is to be. I did not see any evidence of a sewer running through there. It is not practicable to travel across East Bay Avenue because it goes right out through a field. Practically level land. I did not try to negotiate it with a truck, or anything else; but I should imagine from what part of the land I walked over that if you undertook to get over there with any load on a track, you would be likely to bog down in the earth. It is soft. It is not made as a road for the carrying of any weights. East Bay Avenue lies in a field. It is not a made street. You could stand at the corner and look across there and say "That is the direction of this street out there, across that field." As shown on the diagram part of East Bay Avenue is marsh land. A part of that unquestionably was upland. I think there was some land that was filled-in marsh land also. There was a portion of that that was upland. Those marshes run all around in through Hunts Point.

I valued this Hunts Point tract, as on the acreage basis of 180 acres of land at $15,000 per acre. In making up my [fol. 1474] valuation I did not give any consideration to the fact that one part of the plot is more valuable than another. I gave consideration to the entire plot. With reference to the respective values of the plot lying between Hunts Point Avenue, Farragut Street and Halleck Street as shown on this diagram, as compared with the balance of the tract, I did not attempt to decide about it all. I am not prepared to answer any such question. Here was a

large tract of land which could be used. If I were asked to divide this plot up into lots, I haven't any idea whatever what my valuation would be. I know if I owned the property and if I were trying to sell it I would try to sell every part of it as waterfront property and would not attempt to divide it into lots at all. That is its best use in my opinion, and its most valuable use in my opinion. That applies with reference to that portion of the plot which lies between Hunts Point Avenue, Farragut Street and Halleck Street I would give just as much consideration to its waterfront possibilities there as to the balance of the tract and make no distinction between the two as far as its use as waterfront property is concerned. Of course, that has a well-filled bulkhead, a well-constructed bulkhead on it, and there has been some dredging done on the outside that might possibly give it some added value over the rear end of this, at East Bay Avenue and Bronx River, but I have not attempted to allocate any values to any special portion of it. Here is one large tract and one holding. In the vicinity of this tract is practically all vacant land. That is being filled up both from the Bronx River and in and around Causeway Creek. [fol. 1475] It has been filled in with earth and ashes and dump of one sort and another. There is practically no building going on. The streets down in this end of it are practically all paper streets. I don't think there has been very much development anywhere until you get up west of Randall Avenue. I should say before you get any real development of any importance you are three quarters of a mile west and then the character of the development is dwellings. Around Lafayette Avenue and Hunts Point Avenue you get a good many flats and tenements, private houses. You have the American Bank Note Company up along near the railroad. There was a plan and I think the permits had been obtained for the connecting of this land with the Oak Point Station. Of the New York, New Haven & Hartford Railroad, the Oak Point yards of the New York, New Haven & Hartford Railroad, the Oak Point freight yards are three-quarters of a mile away. The nearest connection I should say would be something like one-half or maybe less than one-half a mile, following the general shore line, something in that neighborhood, up to Tiffany Street. They have the rail spurs through the Church E. Gates

property up to Tiffany Street. A great deal of freight is discharged in these yards. It is a make up yard for trains and a great deal of freight is received and shipped. The trucking facilities so far as travelled streets are concerned over which trucks could conveniently traverse run right up Hunts Point Avenue and run across Randall Avenue and across Tiffany Street out to the yards. There is easy connection all the way through, for auto trucks and horse-drawn vehicles. Randall Avenue is not paved. It has some kind [fol. 1476] of a dressing on top, I don't know. It is not a well paved street. Trucks go over it. After you cross Tiffany Street you can go right across on roads there, the Church E. Gates people and the various industries that are located in the north of the Oak Point yards all get into the Oak Point yards. You would use the same streets. You have to go over Randall Avenue before you get to Tiffany Street.

The Church E. Gates Company, a lumber concern, with reference to the Oak Point yards are at Tiffany Street and the East River. The lime company has, I think, about 250 feet in width between them and the Oak Point yards. Those two concerns take in the waterfront between Tiffany Street and the railroad company property. Church E. Gates has a very large frontage, and the lime company has about 250 feet frontage, as I remember, and then come the railroad yards. The fanning out of the tracks is in a sort of northeasterly direction out to the main line of that freight yards. That company is nearer to the Oak Point yard than this Hunt Points Tract and it has easier access to the Oak Point yard than one going from this tract would have. They have a railroad spur right into the land.

This Hunts Point tract might be used for any purpose for which waterfront is used and any business or manufacturing for which waterfront property would be regarded as desirable. Having in mind all of the factors that I have enunciated here with reference to the convenient rail facilities, trucking facilities, and so on and one of the factors in determining the value of waterfront property is the depth [fol. 1477] of the water. On the East River you can easily get out to 40 or 50 feet. I think at the present time there is only about 20 feet. Along the bulkhead there, the East River, of course, taking south of Farragut Street along that

bulkhead it is dredged out there to about 20 feet. When you go north of the Hunts Point Avenue out towards the Bronx River I should say at high water there might be 15 feet and perhaps at low water there would be 8 or 10 feet. You could swing a pier out beyond that and you would have all the deep water you would want. You would not have to go very far to get it. I think you would go inside of 400 feet you would get out to about 70 feet of water if you needed it. You would not have to go out 400 feet with your pier. That depends altogether on how you want to use it. You would not have to go a great distance out from the bulkhead to get 26 or 27 feet of water. There is a deep channel out there. The Bronx River channel at the present time is to be dredged. It has only something like 15 or 16 feet. I think the only channel that is dredged down in the Bronx River at the present time carries 12 feet of water at low tide and about 17 feet or 18 feet at high tide. There are some mud flats out there. You would have to dredge out a channel. I am simply taking the geodetic surveys which show a channel up through the Bronx River which I think is about 12 feet. There has been some dredging of the channel itself going on there up above this tract. There has been no dredging done right here so as to increase the depth of the water right at the waterfront itself. The Bronx River is an arm of the East River at this point and one stream enters into the other.

[fol. 1478] As to Block 850, Lot 1, which is part of the Astoria property I valued that on the acreage basis; 312.67 acres at $15,000 making a total valuation of $4,700,000. I arrived at that valuation from my general knowledge of the waterfront conditions in and about the harbor, the Port of New York, some knowledge of transactions which took place on Flushing Bay, Flushing River, that were the nearest things to this property, the fact that I had occasion to appraise and knew of the property directly across Luyster Creek, all of which at one time belonged to the Astor Veneer Mills, which I appraised back in 1908, and at which time I looked up sales. A large number of properties I have looked up on the East River, both sides of the East River, both sides of the Hudson River, all along the Staten Island shore, up the Hackensack River, Passaic River and Staten Island Sound, and sales which I have

collected and information that I have gathered over a long period of years. As to the Hunts Point tract I got my information as to the depths of the water by inquiry and also looking at geodetic surveys. First of all from Mr. Griffin of A. H. Brady's office. The Bradys were prime movers in the Bronx Terminal Corportion sometime ago, and it was for them that I looked this whole property over. They had the property and I looked it all over sometime ago and it was from them I got that information. I think you will also find that we advertised something of that sort as a part of our advertising in the Bronx Terminal sale. Then there are the maps. We advertised that as having 25 feet of water at low tide at the bulkhead and that the bulkhead was constructed to allow for about 35 [fol. 1479] feet if desired. That is according to an advertisement of Joseph P. Day Company. That was given to us by the owners. I relied upon these various sources of information. I did not happen to have a sounding weight with me, but I know the geodetic survey shows that, and I have known this property for a matter of over ten years. I have frequently discussed it and I know something about the depths of water in most of these properties. The geodetic survey gives the depths of the channels around New York. If you get your sectional maps it gives the depths pretty close in to shore; it shows you the mud flats, rock bottom, and all those things all around New York Harbor. You can get it for almost any point on the Atlantic Coast line, sectional maps and surveys. We have them I suppose for almost any harbor from Portland down to Charleston.

I visited this property for the purpose of making the appraisal of the Astoria property. I think Wednesday or Thursday of last week, I have forgotten which day. I had seen the property a good many times. I had never been on it. Block 850, Lot 1, is bulkheaded over on Luyster Creek, running back pretty well towards the curve in the creek, from the northeast corner. There are bulkheads swinging around to the north. A good portion of that bulkhead is a very substantial concrete bulkhead with a protective stringer along the face. Towards the southerly end on Luyster Creek that becomes a pile and crib bulkhead. Then on the north side of the property you may

notice two little sections that seem to be separated, (witness refers to diagram). There is a bulkhead nearly all [fol. 1480] along that basin, at the east bend of the East River, as shown by these dark lines, on the diagram. Then those two little separate pieces that look like Islands out there are bulkheaded and filled as tiepiers, that is, what I would call them, places where you tie up boats, when you are not unloading against this main dock. Then there is a bulkhead shown at the east of that basin and a pier or dock of crib tile construction. Then at the bend of the river there is a crib and pile bulkhead, and then at Winthrop Avenue running north there is a crib and pile bulkhead, and then there is a stretch there between the Winthrop Avenue bulkhead and the bulkhead at the turn of the East River that is open beach. There is some part of this Block 850 that is not bulkheaded. There is some on the frontage on the East River, north of the dark line, on the diagram, either north or northeast of that dark line, which represents the gas tunnel running from Winthrop Avenue in a northerly direction. Just north of that here is a stretch of land that is not bulkheaded. If I happened to have a scale rule I probably might make some gues- what part that is bulkheaded. It is not stated here. There is property over here, I will say west of Luyster Creek, a portion there that is not bulkheaded. The portions that are not bulkheaded, are of such character that they could be bulkheaded. I don't think anything would have to be done to build a bulkhead in there to overcome natural conditions as they exist. Nothing more than to drive your piles and tie them up. The depth of the water along the East River front has a varying depth. You have got a pretty fair depth at Winthrop Avenue, and when you get out to the other end of it you have some shallow depth, [fol. 1481] and then you get some greater depth. Along in the basin you get about 18 feet of water, and coming into Luyster Creek you get about 30 feet, 28 to 30 feet of water. You will get it right alongside there at the mouth of Luyster Creek, and you can get from there with ocean going vessel through Flushing Bay Channel and right out to the East River. Those varying depths occur where the property is bulkheaded, speaking of the East River front.

I cannot give you the variance in depth. I haven't that exactly, but we have got from 14 to 18 feet of water along near Winthrop Avenue, and out at the corner of the East River you have a stretch there with about 14 or 15 feet of water, and then you swing around towards the bay and then you get shallow water. That shallow water more or less continues up towards the basin. Then in the basin it has been dredged out so as to make a channel with about 18 feet of water at low water, all along the bulkhead, with two or three channels going out to the bay also carrying about 18 feet of water. Beyond that there is a natural channel up towards Luyster Creek and out, which will carry 18 feet of water or greater. You will notice that the outline of that basin is irregular. I should say at its shortest depth it is something around 300 feet and probably at its greatest depth from the outline of the property at the east end it is probably around a thousand feet. There is shallow water inside of the basin, but they have dredged out a sufficient channel to get boats in and out from Flushing Bay into this basin, and then a channel all along the main bulkhead. That is used very largely for coal handling and they have traveling cranes on rails and [fol 1482] you can land a number of boats up alongside of that bulkhead and unload the coal, moving the train along on the tracks. All of it is bulkheaded along the basin front. Still speaking of Block 850, Lot 1, yes, over near Luyster Creek and Winthrop Avenue is marsh land. Only a part of the Luyster Creek front up towards the bend in the creek you will notice, is more or less going up in a northerly direction, taking from Winthrop Avenue up to that bend in the creek in there, there is a section in there that is marshy. There is some filled in land in there likewise. There is a curving piece of land in there that is marshy and the rest of it is filled up all around that curve, and it is continually being filled in. Well, taking that basin as a starting point, going east from that basin you have a little portion of land from three to four or five hundred feet east of the apparent end of the basin, where there is some land that has not been filled in, and then there is some land over along the shore of the Bay there, at a point beginning about 800 feet west of Luyster Creek. There is some land in there that I would lay out

a straight line of the bulkhead and carry it across—land that has not been filled and probably will be filled when they construct the bulkhead. When I speak of the shore line over at Winthrop Avenue, I had in mind Luyster Creek. I confined myself to the land lying along Luyster Creek and along about Winthrop Avenue, running along Winthrop Avenue here until you get practically up to the East River, and when you get over to the East River front there is no marsh land in that vicinity there. That is all filled up land all the way over, somewhere in the neighborhood [fol. 1483] of Chauncey Street, and then there is a curved piece that comes in at Luyster Creek. Of course, you cannot locate that. The streets are not cut through, but just approximating it, it runs in there (referring to map). That is the land that is being filled up. There is some land lying at the exact south corner of the property. That is at Winthrop Avenue east, where there is some meadow land. If Chauncey Street were extended to the easterly line of this property, there is some land that has not been filled. It is not meadow land, it is land under water, and there is a sandy beach. Again, if Chauncey Street were extended, there is some land which apparently at one time was part of the old Barrian's Creek, and Barrian's Creek having been in part filled. There is some of that that has not been filled up to the grade of the surrounding land. That, I think, is all of the unfilled land that I saw, and I walked all along the edge of the property and crossed it in two different directions.

In making up my valuation, I took the 312.67 acres from information conveyed to me by Mr. Alrich of the Gas Company. I did not make any independent examination of the tax maps, in order to ascertain what the boundaries of Block 850 are. I have no information on that subject whatever. I personally scaled off this property and made some calculations, and I arrived at 309 acres. I do not consider myself a competent engineer to follow all these lines with great accuracy, and so I accepted the engineer's statements as being correct, rather than my own.

North of Winthrop Avenue it is not a very wide creek, [fol. 1484] being one of those salt water creeks that is spread out over meadow in high tide, and the channel is not very wide. Out toward the mouth of the Creek it has

been dredged so that large boats can go in there, but this work was done a great many years ago because the Astoria Veneer Company used to bring in ocean going steamers loaded with logs, and they have a log basin directly across from the Gas Company's plant and they had it, to my knowledge, fifteen years ago. I should say the large, heavy draft steamers, from the mouth of Luyster Creek can come in 1,200 feet at least, from this diagram here. Not having a rule, I cannot give the length of the creek from the mouth down to Winthrop Avenue but the scale here is 300 feet to the inch, and if you will make a guess at that; unfortunately there does not happen to be some dimensions on there along the line of that bulkhead. It is fairly well down toward that sharp bend in the creek west of the mouth of the creek. The shop being then indicated by the diagram itself; on the side of Luyster Creek, opposite the Gas Company's frontage on the creek, there is a log basin in the creek there that has a portion of water—that is enclosed with spiles driven in and water in the center. Boats tie up to that spiling. The logs are thrown into the basin and that spiling forms a protection and keeps the logs from floating away. When you get down from twelve to fifteen hundred feet from the mouth of the creek, you have the Oakes Manufacturing Company, the Astoria Veneer Mills, and three or four other places. That property in there is intensively developed for manufacturing purposes. That condition exists down to Riker Avenue. It is not shown on [fol. 1485] this map. I think it is the second street north of Winthrop Avenue or east of Winthrop. It runs parallel with Winthrop Avenue, all the way down to that street and back from the waterfront down to the river. In making up my valuation of $4,700,000 I had in mind as a guide to be a sale up on Flushing Creek, near the Flushing Bridge, made in 1916, William Shannon, of about eight acres of land, at $8,500 per acre. I had a sale made in 1921 of about ten acres of land which William Shannon made, bulkheaded and filled land at $10,000 an acre, that was on Flushing Creek near the causeway. The land was filled and bulkheaded and had no railroad facilities and no possibilities of getting it. It was on the Flushing Creek and could only be reached by a channel and could be used only with boats

drawing less than fourteen feet of water. Just across the Flushing Creek, south of the Causeway Bridge, the Barge Terminal bought land in there and paid an average price of $1.43 per square foot which would give you about $60,000 an acre. That was acquired along in 1918, I think. That tract that was bought by the Barge Canal Company was something about three or four acres in there. The Degnon Contracting Company acquired some land, which would be rather hard to describe. It is on the Flushing Bay and Jackson Avenue, on the east end of the Bay, and I suppose it is more than half a mile west of the Flushing Bridge—land under water, for which they told me that they paid $6,500 as I remember it, for an acre. They were using that for the purpose only of doing some dredging work which they were doing in the Bay, to have a place that they could work from, and they were filling the land back of it and in order to get that waterfront, that is what they paid. That [fol. 1486] was about 1913 or 1914, our own office sold on Pot Cove, which is on the East River, between the Astoria Ferry and the Consolidated Gas Company's property, but it is nearer the Astoria Ferry, the Brown Brothers stoneyard on which we determined that the value of the land was 72 cents per square foot, or about $35,000 per acre. That was land with an old bulkhead, of about 2½ acres. There were buildings on it for a stoneyard. That sold in 1922; a private sale. That tract was about two acres. It was sold for $150,000. The buildings were counted as being worth about $75,000 and we allowed the rest of it for land. The latter property figured at about $35,000 per acre. The Stephens Estate sold some property at Broadway and the East River, bulkhead and filled land, which Mr. Stephens informed me sold at the rate of $1 per square foot, which is about $40,000 per acre. That was sold two years ago, I think, maybe late in 1922 or early in 1923.

Our own office sold a very small piece of waterfront which should not be quoted, I think, as it sold at a rate of $1.20 per square foot, but it was purchased in order to give the firm across the street an outlet, and I think they paid more than the ordinary straight price for that land. Now, we have sold probably 800 acres of waterfront land in the Newark meadows, fronting on both the Hackensack River and the Passaic River, land which, when bulkheaded and

dredged out, could be used by boats carrying not to exceed eighteen feet of water, at prices ranging from ten to twelve thousand dollars per acre. We have sold property on the main land on the west bank of the Passaic River, not bulkheaded, that is, property in the neighborhood of the brewery [fol. 1487] and separated from the main road by a canal, at $7,500 per acre. We have sold land on the waterfront, on the Passaic River, near the Central Railroad Bridge, at $12,000 per acre. We have sold land on Staten Island Sound near the Rahway River at $7,500 per acre, unimproved. We have appraised property on the Hudson River at Edgewater, all land under water, which was sold to the Lloyd Construction Company, for $25,000 per acre, a portion of which was afterwards resold to the New York Central Railroad at $60,000 per acre. Our own office sold at Edgewater recently about ten acres of land under water at the rate of $55,000 per acre and that land was bulkheaded, filled and had a basin.

The Schomberg Estate sold to the Luckenbach Steamship Company about five acres of land on the River Road just below Edgewater which might be termed Bull's Dale's Head or Shadyside, the sections all intermingling, at $48,000 per acre, and that land was not bulkheaded and filled. There was some little natural upland.

The New York Central Railroad purchased about 2,000 feet of frontage and about 60 acres of land on the Hudson River below the Weehawken Ferry station adjoining the ferry on the west side of the river, the one that runs over to 42nd Street, and they paid $35,000 an acre for that in 1914. It was only land under water. The Cunard Steamship Company bought the adjoining plot from the Delaware & Hudson Company and paid, for land under water, a narrow strip of bulkheaded and filled land and some spiling and had a platform dock which formed a basin, at the rate of $50,000 per acre.

[fol. 1488] The United States Government acquired land down on the East River at 63rd Street, 64th and 65th Streets, for the purpose of their naval base, and paid about $1.33 a square foot, which is nearly $60,000 per acre for land under water. That was on the Brooklyn side, in Brooklyn. In 1918, I appraised it for that value and the values were established by sales of similar waterfronts up

to the East River at that point. The City of New York itself, in 1912, paid $1.10 for land under water, which was comprised in this part which was taken by the Government, and they also had the Commission award $1.46 for similar land, which the City took and then rescinded taking. Coming up along the Brooklyn shore into Cowanus Creek, I have recently compiled a list of sales for the purpose of testifying as to the value of the land in the Beard Storage Warehouse and Basin, and the prices for land under water, with a frontage of upland, ran from 70 cents to $1.00 per square foot. There is no possibility of getting a railroad siding. Our own office sold, at just east of Cowanus Creek, a plot of eight acres, bulkheaded and filled, with some old buildings, at the rate of $50,000 per acre. The property was re-sold at about $55,000 per acre and they now want $60,000 per acre. I looked the property over, and in making my valuation I would give what people want for it some slight consideration. I do not consider it the basis, but that happened to be the only place that is for sale right there, possessing the same facilities as that, that can be bought at all, so I would give it some consideration, particularly knowing that our office had sold it and knowing about the resale. [fol. 1489] It would only indicate to my mind that the waterfront was not falling down in value. At Newtown Creek, with a 14 feet of water along the bulkhead line and the distance out into the channel being about 400 feet, just south of the mouth of Newtown Creek, a piece of land running through to the East River, sold to the French High Commission at a price of $1.08 a square foot. A piece to the south of that acquired by the Barge Terminal, at $1.20 per square foot, as my recollection serves me, and a piece to the south of that and surrounding the part acquired by the Barge Terminal, sold to the French High Commission at $1.30 a foot. 43,000 feet bring those acreage prices up in the neighborhood of $50,000 or $55,000. We sold a small piece of waterfront on the East River in Long Island City, south of Pierce Bank, comprising an acre and a half, at the rate of $60,000 per acre.

The Bradley Contracting Company reported to me that they had sold to the Barge Terminal a portion of their land lying along the river front north of the Queens Borough Bridge to Vernon Bank, at the rate of $2.00 per square foot,

making $80,000 per acre. Those are all the sales which I can recall to mind as giving some idea of the values of the properties scattered around the harbor. Probably we have lists of many more which I do not recall at the moment; but I have taken those sales from my experience in appraising property all around the harbor and my study of the conditions surrounding the various waterfronts, the sales of which I knew and the properties I had examined in determining the value which I would place upon this piece of property. Now, among these sales I have just enumerated, [fol. 1490] there is only one sale I can recall of a tract as large as Block 850, Lot 1, and that is about 300 acres of land at Trembly, New Jersey, fronting on the Staten Island Sound, running around with a long fringe on the Rahway River and running back across the Central Railroad tracks to the Pennsylvania Railroad tracks, and comprising a little over 300 acres—about 330, to the best of my remembrance—some of them a large amount of meadow unimproved with only one semi-neglected road running down into it—a trucking road—belonging to a syndicate which was controlled by Richard H. Montgomery, which I appraised back in 1912, at an average price of about $6,000 and which Mr. Montgomery reported to me he sold at an average price of $7,000 per acre. At a private sale there is one more I might mention, at Carteret, New Jersey. That was not so large a tract, by the way. The Bethlehem Street Company sold about 40 acres of land fronting on Staten Island Sound to the I. T. Williams Lumber Company at the rate of $8,500 per acre. That was in 1922, a private sale. The transfer itself has been recorded.

The first of these sales I have enumerated was one in 1916 on Flushing Creek, eight acres at $8,500 per acre. With reference to this Block 850, Lot 1, look at the easterly line of this property, and that becomes Flushing Bay or Bowery Bay, a mile and a half—look across from this, and that is Riker's Island. You swing to the east and come out into Bowery Bay or Flushing Bay and you swing around to the northeast and you come into Flushing Creek. It is not opposite the Gas company's property. You swing out around North Beach and swing out around that way and you [fol. 1491] get down into Flushing Creek. It is quite a

little distance east of the Gas Company's property. That was a private sale. I think the property is now being used by a sand and gravel man. It was bulkheaded—an ash pier. He has his boats come up there to the bulkhead. Well, I do not know whether he has any occasion for rail facilities. His boats do his business for him. It would make a difference in the value of the land if he could get railroad facilities. That is, the price that was agreed on on between the buyer and the seller. Every line of business does not have to have rail facilities to handle carload lots.

The transaction in 1921 of ten acres at $10,000 per acre, at Flushing Creek is the adjoining parcel to the first sale recorded to me by Mr. Shannon. I do not know what was the property bought for. I did not see that that was in use at the time that I looked at it a short time after this transaction was reported to me. I do not know what use has been made of it since the time that the Shannons bought it. Shannon himself was a contractor. He used to store the material out there, and bought that place originally—filled it in for the purpose of tying up his boats and his dredging machinery and storing away a variety of machinery that a contractor would use.

Regarding the transaction in 1918 at Jackson Avenue in which the Barge Terminal Company bought some property at the rate of about $60,000 an acre, three or four acres. That also fronts on Flushing Creek; not bulkheaded. Nothing on that at the time. Merely meadow land. That was condemnation. As to whether the awards made in [fol. 1492] condemnation proceedings are fair criteria in enabling me to arrive at my valuation of properties you must accept the findings of the Condemnation Commission as based upon the sworn statements of various real estate experts that that is a fair market value, based upon knowledge and experience, and that the Commission awards on that same basis. The mere fact that I might differ in opinion would not be conclusive evidence that the Commission and everybody else was wrong. I would hesitate to criticise a Commission that way. I will be glad to have the information regarding an award made in a condemnation proceeding as a safe guide in enabling me to arrive at my

valuation of property which I am asked to appraise and I will give such weight to it as I see fit. I have seen some awards made that differed very materially from my own. You might notice in this case that if I made a comparison between the values and spread that same value over all of this tract, I would have a very much larger value, you know. I have given it as $15,000 an acre, and the other would be at the rate of $60,000. So you see, it is four times the rate paid for it, that I placed on this, and this has a large amount of bulkheading and good fill and the other piece was merely meadow.

The transaction in 1913 or 1914 in which the Degnon Contracting Company was involved, was land under water which sold at the rate of $6,500 an acre for about ten acres; private sale. The information that I got from Mr. Degnon's office was that they were doing some dredging of the channel, making a channel in through Flushing Bay up to Flushing Creek, and they wanted a base for their dredgers [fol. 1493] and for the handling of machinery and they had to get this, and they thought this was a good thing for them to do, buy that piece of land, and as they had a big job they bought this piece of land; said, "Well, we will fill it up some way. When we get through with our dredging, perhaps we will fill it in here," and they were filling in back across Jackson Avenue. So they bought that land and bought the piece that they could buy cheapest. I don't regard that as a special transaction, or as a transaction having some rather special features. I knew at the time that the people along in there, we had one or two people that we knew that had that land under water and they were talking of $10,000 an acre for it and would not sell any of it for any less. The fact that the Degnon people bought that without any regard to the question of whether or not that particular piece of waterfront property had any rail facilities or whether or not there were good trucking facilities between the waterfront property and wherever the rail facilities might be located was one of the factors, certainly did not enter into their mind. They had use for a piece of waterfront and bought a piece that was available at the time. That might have, because nearly everybody that is doing contracting work has more or less teaming to do and the fact that this land abutted up against a main thorough-

fare, like Jackson Avenue, might have influenced their judgment. They bought that because they wanted it for that particular dredging job that they were doing, but they might want to get portions of dredging machinery or they might want to get supplies for holding dredging, or for construction, that would not come in boats. They [fol. 1494] might want small quantities at any time and would not send a boat out, but they could send a truck along a good highway and get right into the center of the city. Personally of my own knowledge, I cannot say that I know whether Degnon ever made such use of the property as I have just indicated.

Pot Cove is a little indenture from the East River, between the Astoria Ferry and North of the Astoria Ferry. You have a few manufacturing plants perhaps for six or seven hundred feet along the East River; then the river bends in to the eastward and makes what is known as Pot Cove. That was bought in 1922 at the rate of about $35,000 an acre. Clients of DeLancey Nicoll, another stone man, I think. It was a stone yard, having a waterfront. It had erected on it one of those steel frame metal covered sheds that the stone yard people use. After the sale, it continued in that use. It is still being used as a stone yard and is bulkheaded. That was about two acres, something of that sort. No other use is being made of that property except such use as is being made by way of having the boats come up to the bulkhead and load and unload the stone.

That tract in which the Stevens Estate was affected and which sold for about $40,000 an acre, and Mr. Stevens told me that he got about a dollar a square foot for it. My recollection is that there was about 100 lots in that private sale. I do not know by whom it had been bought. I merely asked Mr. Stevens. I understood it had been sold. I had worked on the property and appraised it ten or twelve years before that. That has been bulkheaded, and ash-filled [fol. 1495] and there is a basin. I do not know what use has been made of the property since its sale in 1922. I have not been over to see what has been done with it. I understood it was going to be used by somebody using it for waterfront purposes. My recollection is it was something for a lumber yard, but I would not be certain about that. That is just below the Astoria Ferry, on the Queens side of the river. So that it is over in Astoria, of about 100 lots.

The transaction in which those 800 acres in the Newark Meadows were included and which sold for from ten to twelve thousand dollars an acre covered a period from about 1916 to 1923, and part of that period was the part in which we were engaged in the World War, when prices of waterfront property in and about New York Harbor were higher than they had been for a great many years before. We had a large amount of acreage for sale and we had certain facilities, and I regard that as a fair guide as furnishing a criterian in determining the value of property like this Block 850. We have sold land since the war at higher prices than we sold at during the war in the Newark Meadows; that is where that 800 acres that I am speaking about is. So that you cannot say that the prices during the war times were higher than they are now. Our own experience shows that that is not the fact. That the prices in the war time were higher than they are now is not true. I am talking now of property in Newark Meadows. We are sales agents for the Newark Meadows. I do not find that they are asking any less prices now for waterfront property on the east side of it on the North River, either on the Brooklyn [fol. 1496] side or on the New York side than during the war period. But the thing is that you have not had many sales since the war. During the war period we were extremely active in hunting up all the waterfront that could be found. There were sales made and there haven't been many resales made. A great many of those properties, the French High Commission has been trying for two years to dispose of their properties. They have been trying to, but they have not been able to. I will say this, they will sell for less money than they paid; but we have not had a great deal of activity. I do not find that the asking prices have been lowered any. In fact, I think they are asking more in a great many instances than they would have sold for during the war. In a market which is characterized by very little selling and very little inquiry, if I am asked whether prices have receded the only guide that I have is: Are there any offers and what are the people asking? If properties are offered at a certain price and there are no buyers, you cannot say that the prices have receded, because the transactions have not been there to

show that prices have receded. It is merely a case of stagnation. Suppose you have a situation like this, where certain property is being held by the owners thereof at prices which are so high as to be prohibitive. You would not regard the prices that those owners were asking as furnishing a fair guide to the market value of the property so held, but until they are sold I would not say that the price had receded. That is what I am trying to make the distinction in. Those 800 acres of the New York meadows between 1916 and 1923 were bought for various manufacturing purposes; Federal Shipbuildings Company; Henry Ford; [fol. 1497] Niles-Bement-Pond people; the Western Electric Company; the Foundation Company; a variety of concerns like that. We sold a large amount of acreage to the Pennsylvania Railroad. Those acres were for manufacturing purposes. You asked me what they were sold for. They were sold to a variety of customers, but they were generally for the purpose of establishing large manufacturies, except the piece that the railroad company bought to enlarge their yard facilities, and that was to make their yard facilities greater than they had been before the purchase. Now, in a transaction of that character, I would regard the price at which the property was sold as a fair guide in determining its market value, because it was carried on by private negotiations. In other words, where property is bought by a concern or an individual for the purpose of increasing the amount of land that he has, for some reason best known to himself, I would regard the price that he paid for that property a fair guide in determining its market value. People do not generally buy property unless they have some use for it. Of course, if they have a speculator, a speculator would always like to buy at less than the fair market value in the hope that he could turn around and sell that at its fair market value and make a profit. The fairest thing is when you find a man who is not forced. The railroad was not forced to buy the land that they bought. It isn't fair to assume that they wanted that property in their business. It was not necessary at all to purchase it. They could have gotten along with the facilities they had, for the simple reason they did [fol. 1498] not improve it at once. That is the real answer.

The land lays there and it has not been improved for those yard purposes. But they have foresight. They are laying up facilities for the future. It does happen, that large corporations frequently buy property which they do not use for a number of years but merely buy it as a matter of foresight to provide against the day when they will have use for it. It is the part of wisdom for a man to protect himself against future growth. It would be a poor corporation that did not have some foresight in that direction. It may possibly be that there may be a sufficiency of development for the moment to accommodate the business of the company, and until they get ready to expand again they do not have to buy. The country is full of plants for sale that were erected during the wartime and it happens that there is no use for today. Certainly a man would not buy new land to erect a plant on when there are plenty of plants already completed and ready to use and occupy, for sale, unless he had to have some particular location for his particular business. There is a great deal of manufacturing and business that is not confined to any one place. Inquiries come in the form: What have you got at about so much land and so much building, with about such surroundings. And that gives us a radius of a very considerable extent in which to operate. I do not accept asking prices as their criteria of value, but I consider them, in the absence of tranactions, I consider them as having some bearing on value; that is all. I do not consider them as the best criteria of value. It is a fact that some of those 800 acres in the Newark Meadows were sold for some pur-
[fol. 1499] poses in connection with the country's prosecution of the war.

By the Master:

The last two or three sales that have been made in there have been higher than any that we sold at any time during the war.

By Mr. Donnelly:

Upon the Staten Island Sound, near Feigenspen's, there was a piece there that was sold at $2,500 an acre on the Passaic River. It is just a little below our Newark

Meadows holdings; but it is close to them. It is on the Newark side, separated from the river by the canal. That is $7,500 an acre. Those have been made in the last couple of years. That transaction that I referred to as being unimproved property is a tract of about seven acres of waterfront property and is bulkheaded, not marshy land. It has been filled. I do not know for what purpose it was bought. I think, however, it was afterwards used by something in the line of a special cement and asphalt compound. I have seen them down there. I don't know just what they do make, but they have the dusty appearance of a cement mill. In other words the business is of a character that it is conducted by boats, that is, part of it, bringing the material there and taking it away. It is not something that requires any rail facilities. I don't think they put in a rail.

Referring to the property having been sold for about $25,000 an acre and then resold to the New York Central at $60,000. That property is over on the Hudson River shore north of Weehawken. It is about at the north end of the Weehawken railroad yards. Perhaps it is a mile up the river beyond the Weehawken ferry, the terminal of th West Shore road. It was land that laid between the [fol. 1500] foot of the Palisades and the pierhead line of the river. It was purchased by the Lord Construction Company for the purpose of putting up a big steamship terminal. They bought it from the Woodside Land Company. The New York Central Railroad had property adjoining on the south and they bought a portion of the property from the Lord Construction Company. The Lord Construction Company had gathered it from three or four owners at an average price of something like $25,000 per acre and they sold this portion to the New York Central at the rate of $50,000 per acre. This sale to the New York Central was $50,000. The Lord Construction Company proceeded to do some work on their plot, but they never have completed the steamship terminal. Apparently the project fell through. That sale to the Lord Construction Company was about 1920 or 1921. The resale to the New York Central was made at the same time. The Lord Construction Company had gathered together a certain amount and they were approached by the New York Central to sell

them a certain part of it, so the Lord Construction Company went further along and bought some property on the north side of the original line and then sold a piece on the south to the New York Central. I don't think the Lord Construction Company had really cleaned up their title and passed deeds before they made the sale. Not any use is being made of the property that was sold to the Central. It remains in its same condition. It was purchased in anticipation of the great business that was coming right there. The New York Central has some property immediately ad- [fol. 1501] joining used for railroad purposes. They have piers, docks and a freight yard. This Weehawken ferry is opposite 42nd Street, New York.

The Edgewater transaction where the property sold for about $55,000 an acre was made recently. That is up above the property of the Lord Construction Company up towards the Fort Lee Ferry, on the same side of the river, in other words. That transaction was closed up last year, in fact, it was not really closed until this year. The transaction was made the latter part of last year, the bargain was made. That was a little over ten acres, bulkheaded and filled and a slip bought by one of the subsidiaries of the Standard Oil Company. It had been used by an oil company and they are probably making their improvements to give more storage. It is intended to be used for the purpose of oil distribution and storage. They bring tankers up there and pump, the oil out into storage tanks and grade it, and so forth and then ship it from there around into various parts of the City, New York Harbor. I think this transaction in which the Schomberg Estate was involved, also up around Edgewater was in 1920. That adjoined the Lord Construction Company. Schomberg had a piece of land there with some upland. He himself had a frontage of nearly 2,000 feet on the river and he had a right from the State, a grant out to the pierhead line, and he sold his land, his upland and the water land and his right to a grant out to the pierhead line to the Luckenbach Steamship Company. They were going to establish a big terminal. It was the combined price there which I stated. That is what it cost the Luckenbach Company. They started some work and then gave it up. [fol. 1502] They never carried through the big terminal

project that they had. The Luckenbach Steamship Company operates around New York Harbor here. They have got a pier here on the New York side of the Hudson River. They are freight carriers, mostly. That property at Edgewater is still held, or was the last I knew of it. I was talking to Mr. Schomberg about six months ago. They (the Luckenbach S. S. Co.) still owned it. It had not come back to him. They had done some work there, they had dumped in some fill, and I think they started in to do some spiling work, or making contracts for it. I know they have done some filling. It was apparently intended to be used as a boat terminal by the Luckenbach Steamship Company. They can get rail in there, you know. The shore railroad track runs right along all the way up, almost to the Fort Lee ferry. It stops a little beyond the Warner sugar refinery. It could have rail facilities as well as water. The cut that comes through there comes through the Lehigh Valley, but there is a shore road there that connects. You could switch from there all the way down to Bayonne. You go over a dozen little different railroad tracks to get down to Bayonne, but they all hook up together.

The Cunard Steamship Company bought from the Delaware & Hudson Company a little over a thousand feet, between fifteen and sixteen hundred feet of river frontage. On the Jersey shore, on the Hudson River south of the Weehawken ferry, about fifteen hundred to two thousand feet of river frontage between them and the ferry. That was owned by the New York Central Railroad, or one of its subsidiaries, and the Cunard people bought the land of the Delaware & Hudson Company and leased land of the [fol. 1503] New York Central and they bought some land back of the Delaware & Hudson land, making four purchases, and they were going to remove all of their business from New York over there. They were having some trouble with our city authorities about piers, rights, and so forth, so they bought that property intending to move their entire plant and bid good-by to New York City for everything except the booking office over here. In other words, to use that property on the Jersey side in the same way they use the property that they occupy on the New York side. Only they would use it also for all their freight lines and would

have direct rail to boat connection over there. They saw a good many advantages in doing that. Then all at once they abandoned the plant. So they still have the property. I believe, the last I knew the New York Central had released them from the lease, but they still have the Delaware & Hudson, they still own that, but at that time they paid that price for the land. The Cunard Steamship Company purchases, taken altogether, the purchase and leases, it must have covered something like one hundred acres, running along the river. They controlled something like thirty-five hundred feet deep of river front, from fourteen to sixteen hundred feet, and some land the other side of the railroad. That purchase of approximately 3,500 feet of river front was south of this Edgewater purchase, near by.

By the Master:

One is north of the ferry and the other is south of the ferry. I presume there would be about a mile difference.

By Mr. Donnelly:

The Cunard people started to make improvements there to carry out that project that they had in mind. They [fol. 1504] removed some buildings of the Delaware & Hudson, and they went back across the railroad and did some blasting out of rock and changing of grade, and they were going right along with that work. They did own the land, and hold the title the last time I knew, they held the title to the land they bought from the Delaware & Hudson, and I was informed just recently that the New York Central had allowed them to cancel their leases for a consideration. Just what that transaction is I have not yet found out. The New York Central Railroad Company gave me the data and I checked it up over in the record office, in Bergen County, and the Cunard people, and the Delaware & Hudson people both testified as to what that cost. Those matters all came out in the process of a proceeding by all the railroads on certiorari for a review of the tax assessments over in the State of New Jersey, in which I was a witness and in which I appeared as a witness for the companies. I think they succeeded in getting a reduction in the assessed

valuations. I understood they did. I appeared there as a witness in support of the company's contention that the assessed valuation should be reduced. My information as to the prices paid by the Cunard Steamship Company were derived from the same source. They were checked up, however, with other sources, but that information was all given there, so I presume it was absolutely correct.

As to one transaction in 1918 in which our Government was involved, referring to a piece of property on the East River, 63rd, 64th and 65th Streets, for a Naval base was the Army base down in South Brooklyn, below the Bush [fol. 1505] Terminal, of the Brooklyn side. That was all in connection with some purpose in which the Government's prosecution of the war was involved and acquired specifically for a base for the receipt storage and shipping of Army supplies. In arriving at the valuation that I gave to Block 850, Lot 1, the price the Government paid there simply tended to go to my qualification to form a judgment on the value of waterfronts. I was one of the witnesses as to a portion of the property that they acquired for that Army base. I testified in that proceeding as to the value of the properties of the Brooklyn Rapid Transit Company whose property was taken in conjunction with other properties. To make a comparison of the fair market value of the property, that property in South Brooklyn was intrinsically very much more valuable than this property of the Astoria gas plant. If you tried to go over on the bay and buy the property of the Brooklyn Rapid Transit Company at the price which was decided by the Commission, you could not have gotten it for double the price. Of course, you have to consider the Brooklyn Rapid Transit Company, that they were using the waterfront for a special purpose of their own, and the loss of it would mean to them a consequential damage. You appreciate that. I do know, that if you wanted to buy a piece of property over on that shore you would have had to pay at least the price which the Government paid. Any private purchaser would have had to pay that price to get a location on the Brooklyn shore from Gowanus Bay down to 65th Street. The Government still owns that property and it is making use of it. There is storage in there, a great deal of Army goods are stored in [fol. 1506] there, or were the last account I had. It came

up in front of me during the last year when I had several conferences with a man who wanted to lease and operate the entire property for a storage warehouse and at that time there was a question of how soon could the Government clean out the property that was stored in there. The Government's use of the property is rather non-active. They have a great deal of material stored in there. They have not got rid of it yet. After that I do not think it is going to be actively used by the Government; the indications are that it will not be. This was a purchase in fee by the Government. They acquired title. The proceedings were the regular condemnation proceeding for the acquirement of the fee. The Government took the property in condemnation proceedings, and paid the price which the Commissioner awarded. I did not mean that that was a direct purchase.

Last year the Beard Storage Warehouse concern went into certiorari for the review of their tax assessments, along in December or November, somewhere there and I was asked to be their witness. I went over and examined their property and I gathered all the sales which had been made in that section over a period of six or seven years. There was no sale there. I simply say at that time I gathered the information of sales made in the neighborhood of Gowanus Basin and that information of course I had, and I have examined properties in there and know the general condition surrounding it. I examined those properties over there for the purpose of enabling me to testify in the certiorari proceeding to reduce the assessed valuation. My [fol. 1507] recollection of the tract is taking the land and land under water, there was approximately 100 acres owned by the Beard Storage Warehouse and the proceeding relating to the ass-ed valuations on the property for 1921, 1922 and 1923. I did equip myself to testify but I did not testify. I was not called upon to give my testimony. I did not make an affidavit in the proceeding. I couldn't tell you what the assessed valuations on the property for 1921, 1922 and 1923 were. It can be had. In equipping myself to testify I prepared myself to give testimony. I was not retained and was not called upon to testify. I might have the assessed valuations on the property for the years 1921, 1922 and 1923 in my possession. I never made a complete

report on the property. My recollection is that as to some portions of the property, it being assessed in several lot numbers, I concluded the assessed valuation was too high, and in some other cases I think I said I thought it was too low. I do not believe I could give you the exact figures at the moment, and I don't know that I have them, I never made up an absolute report on it.

By the Master:

A portion of this property is improved with storage warehouses and they also own the land out in the water which is used as a turning basin. They rent portions of it and they occupy portions for their own purpose. They had a land locked basin in there.

By Mr. Donnelly:

I can give you the location of the property. It is near the Gowanus Creek just at the turn into Gowanus Creek. It is the property that lies on the Brooklyn shore where Gowanus Creek turns in. It is known all over as the Beard Basin. It covers a large number of streets.

By the Master:

The statement which I make is that when I was asked to make an examination of the sales in the vicinity, I took [fol. 1508] the sales of properties in that neighborhood, most of them being sales of land under water, with a fringe of upland, and determined from those sales what prices per square foot had been paid for land, and that was the determining thing, or that might help me in determining the value of the land. As to the Beard property it did not help me to any extent for the simple reason that that was a peculiarly arranged piece of property, the people having built up a basin and having a large amount of land under water which was used as a turning basin for ships to get in. I unquestionably have a list of sales that were compiled. I didn't turn in any figures of the lot and block numbers of that Beard property.

By Mr. Donnolly:

I handed counsel (Mr. Donnelly) a sheet of yellow paper headed "Beard Estate" on which appear certain block and

lot numbers and some figures referring to the assessed valuations for land and improvements for the year 1922 and including 1923. The block and lot numbers that appear upon the yellow sheet to which I refer cover the property of the Beard Estate. At the bottom, under the heading "1923" where the figure $10,000 land under water appears, applies to Block 612, Lot 131, part of the fairway of the Erie Basin, which is the place where there is water access to the land on the inside and I carried it out so it would not get mixed up with the other two blocks.

The statement referred to is as follows:

Beard Estate

Block 612, Lot 1, Assessed

Land	$940,900
Improvements	454,100
	$1,395,000

[fol. 1509] 1920

Block 613, Lot 1, Assessed

Land	$2,500,000
Improvements	254,000
	$2,754,000

1921

Block 612, Lot 1 Total	$2,198,200
613, Lot 1	4,000,000
	$6,198,200

1922

Block 612, Lot 1	$2,085,000
" 613, Lot 1	4,000,000
	$6,085,000

1923

Block 612, Lot 1 Land	$2,400,000
Building	1,200,000
	$3,600,000
Block 612, Lot 131 (part of fairway)	$10,000
Land under water.	
Block 613, Lot 1 Land	$5,575,000
Building	575,000
	$6,150,000

Some property on Newtown Creek south of the mouth of the Creek was sold to the French High Commission in 1917, I think. The tract was something like 700 feet on the river and running back to three or four hundred feet, to Commercial Street, bulkheaded waterfront property. That is property that would have a different value from this Astoria [fol. 1510] land, but I would give some consideration to it as indicative of what the land was worth, where they had no deep water access. I examined this property before it was sold to the French High Commission, and I examined it after they had owned it and wanted it put on the market, and I found that the depth of water along the bulkhead was about sixteen feet at high tide, and it was eleven or twelve feet at low tide. At one of the times of my examination I know there was a large barge tied up against the dock and it rested on the bottom and canted. The French High Commission bought outright in feet. I get my information as to that scale from Bryan L. Kennelly a real estate man. I think it came from that office. We only got the property on the basis of square feet. I think the purchase price was something like $1.22. I have not the memorandum here of what I said this morning, but I had it fresh in my mind then. I think that particular piece was at the rate of $1.22 and the Barge Terminal on the other side was $1.40. The French High Commission put up a lot of one-story storages to handle war material from there. I was on the premises at one time when they were very busy loading and unloading barges with war materials to go across the water. They had vessels anchored out in the channel of the East River and barges were going back and forth. The Commission does not use the property. It is now lying unused for at least a year. The property is in the market. The French High Commission is trying to sell it. 43,560 square feet are in an acre; that makes it about $53,000 an acre.

[fol. 1511] That property that we sold on the East River at Long Island City, one and a half acres at about $60,000 an acre, was sold to Stewart Herschman. I do not think they made any use of the property. It was bought as a speculation ten years ago. There was some old shacks on it that probably paid something as taxpayers, but he never made any improvement or use of it. I think he might have thought it was going to be used in conjunction with some

property on Vernon Avenue, back of it. He purchased this at an auction sale. It did not abut the property he had there. He had some property across Vernon Avenue about two hundred feet from the nearest point of this property. Vernon Avenue separated the two. He had large holdings on the east side of Vernon Avenue and after you cross Vernon Avenue there was a row of perhaps around 125 feet deep on the west side of Vernon Avenue and then this property on the river front. He had an access through the right of way on Pierce Avenue. This one and a half acres was bulkheaded waterfront property. There was an old bulkhead on it. It was not in very good repair at the time I saw it.

Now referring to the rest of the property embraced in the Astoria tract the blocks and lots are south of Winthrop Avenue, between Winthrop and Walcott Avenues; that is sort of southwest. There is only one open and graded street of the cross streets. Winthrop Avenue is open and Walcott Avenue and Val Alst Avenue and at the Boulevard there, sort of an asphalt and tar top surfaced road. The other streets running on from Barclay up to and including Lawrence Street are not physically open. I believe Mer- [fol. 1512] chant Street and Barclay Street are not legally acquired. You can travel them, but there is no indication of streets. Walcott Avenue is an open and traveled street with a very considerable amount of building along it but those other streets are merely laid out on paper. The land lays in its natural state. In this vicinity, right on Walcott Avenue, from Van Alst Avenue up to and beyond Chauncey Street, and on Winthrop Avenue. Winthrop Avenue has a much lower grade than Walcott Avenue and the topography of that ground is a slight rise from Walcott Avenue towards Winthrop Avenue. Cutting through Winthrop Avenue is the land on the southwest side of Winthrop Avenue, which contains a sharp bank of varying depths, I should say from ten to twenty feet above the grade of Winthrop Avenue. It is a corner bank and does not show the signs of any rock. I believe Winthrop and Walcott Avenues are both 80-foot streets. Walcott is 80 feet.

For the purpose of making my appraisals here, I examined these parcels on the block at the same time as Block

No. 850. In 1922 the Woodward Brown Realty Company sold to the Potter Avenue Realty Company 209 lots fronting on Ditmas Avenue, Hallett and Van Alst Avenue. That is to the west of Walcott Avenue for a consideration of $400,000. That is at the rate of $1,950 per lot. In January 1924, the Woodward Brown Realty Company sold to the Astoria Community Company 182 lots lying between Ditmas and Woolsey Avenues and west of Second Avenue running over almost to Van Alst; they are scattered in various blocks, but the average price; the total sale was [fol. 1513] $478,000 and the average price as $2,620 per lot. In 1923, the Woodward Brown Realty Company sold to the Van Alst Potter Avenue Realty 248 lots scattered in various blocks from Walcott Avenue south to Woolsey and from Van Alst over toward Debevois, almost to Debevoise. The total price paid was $576,000 and the average price per lot was $2,330. In 1922 sale of executors to Gustave Heim of 10 lots on Kouwenhoven and Steinway Avenue just north of Riker Avenue for $18,500; $1,850 per lot average. In 1923 the Presto Lite Co. sold to Henry Schults 20 lots on Albert and Theodore Avenues, just a little northerly of Winthrop Avenue, 20 lots for $25,500 an average of $1,275.

In 1922, P. J. Mara sold to R. B. Capone the northeast corner of Theodore Avenue and Ditmas Avenue, eight lots for $13,000 an average price of $1,625.

In 1922 Steinway & Sons sold to H. O. Martin two lots on Theodore Avenue just north of Ditmas Avenue for $3,000 at the rate of $1,500 each.

In 1924 Steinway & Sons sold to William Toner 54 lots Winthrop Avenue to Riker Avenue, and Steinway Avenue to Albert Avenue for $47,500 at the rate of $880 per lot.

In 1923 Steinway & Sons sold to the Fradko Realty & Construction Company 40 lots on Ditmas Avenue, Purdy Avenue and Theodore Avenue for $50,000 at the rate of $1,250 per lot.

In 1923 the American Real Estate Company sold to the Hador Construction Company 33 lots on Woolsey, Rapelje Avenue, and Barstow Street for $61,500 at the rate of $1,850 per lot.

In 1923, the American Real Estate Company sold to the H. & S. Construction Company 69 lots on Woolsey, Black-

[fol. 1514] well and Barstow Streets and Avenues for $183,000 which is at the rate of $2,650 per lot.

In 1923 the American Real Estate Company sold to the Astoria Land Company eight lots on Ditmars Avenue between Sixth and Seventh Avenues for $15,000 which is at the rate of $1,750 per lot.

In 1923 the Harrison Holding Company sold to the Lastmore Realty Company 12 lots on Second Avenue, Delevoise near Ditmars for $70,250, which is at the rate of $5,900 per lot. That is the subway station.

In 1923 the American Real Estate Company sold to Frans O. K. Construction Company 46 lots on Potter Avenue, Wolcott Avenue, Kouwenhoven Avenue for $99,000 which is at the rate of $2,150 per lot. I think that is all. These were all vacant properties. None were at public auction; all private sale and that applies to the plots as large as 209, 182 and 248 lots respectively.

The tract of 209 lots, all sold at one time, were scattered from one block south to four blocks south and they are scattered in an east and west direction from Van Alst Avenue over further east than Chauncey. Years ago, I might tell you, that entire section from White Avenue, Woolsey Avenue, north to Ditmars Avenue to Wolcott Avenue, in fact, was all laid out, I think, if I remember correctly, by the Richard Finley Company and maps filed of the whole section. They in turn had a number of companies which I believe were really subsidiary to themselves and made transfers to separate companies, various [fol. 1515] parties, and all the companies started out to sell lots and they carried that on for a good many years, not very successfully. A great many of these 209 lots had been improved since they were purchased in 1922. We held an auction sale—Joseph P. Day held a sale over there in 1906, I think it was, when we tried to get rid of some 600 lots for one of their sub-syndicates and managed to sell a couple of hundred of them at from five to six hundred dollar-, and there was not much activity over there until the completion of the Second Avenue subway out to Ditmars Avenue, and with that there became a very considerable activity in there. Finally when that housing shortage of 1920 and 1921 occurred, there was very active building and they were successful in selling, and then all these

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smaller companies cleaned out the balance of their holdings. That is what happened in there. The American Real Estate Company had a great many of those lots and the Woodward Brown Realty Company had a great many of those lots, and Steinway & Sons of course had a great deal of land up north of them and they found a good market and cleaned out.

That housing shortage conditions existed in 1920 and it has continued up to the present time. They are pretty well built up there now. I find there are quite a good many signs but if you had gone there a year ago you would not have been able to find a house to rent, and they were selling them before they were finished. Up to that time the housing situation had remained rather acute. There was certainly a very good market in here for houses. While it remained in that acute situation, the prices that people were getting for their properties were not abnormal [fol. 1516] as compared with normal times; not for land situated as this was, good transit into the center of the city and good connections with up or downtown Manhattan. It made a very desirable place for development, and there was no great development of any kind of cheap tenements or anything else. In this tract there is a park down at the foot of Hyatt Street and the river front, and it made a desirable spot for the development of housing. I do not think that the prices that the owners were getting for the land present a rather abnormal situation as compared with the time when we did not have the acute housing situation. I know that in 1909 or 1910, as nearly as I can recollect it, I went over a great many—several hundred, perhaps 1,200—lots in there to make an appraisal of them, and I know that the owners of that property had ideas at that time of twice what I had of the values, and they would not let them go. They were talking $2,000 a lot away back then and I could not see much above $800 to $1,000 for all of their lots at that time. If you wanted to buy a lot, you would have to pay that price and they occasionally sold a lot or two lots; but I imagine that in eight or ten years over there there were not above a dozen houses built on their land, because they would not sell them. They might have sold them at a discount, but they wanted as much then as they got, almost.

The character of the development of those 209 lots is one and two-family houses. Most of the streets in that neighborhood where the 209 lots were sold are open and sewered and are graded. The avenue, of course, we have Wolcott [fol. 1517] Avenue. Part of this development is right on the south side of Wolcott Avenue. Take the south side of Wolcott Avenue, east of Van Alst Avenue, and there is a good deal of buildings, nice type, little brick and some frame dwellings. Now, south of Wolcott Avenue, all those cross-streets are opened and passable, with the exception possibly up at Chauncey Avenue and the next street, which run into the old Kindred Sanitarium, and that blocks them off; but below Ditmars Avenue they are all open and passable. Some of them are paved; some of them are not. There is building going on in each and every one of those streets today of the type of one and two family houses. Where the building is going on the streets are sewered and graded. Some of them are not made, not opened, and the owners are putting in their own sidewalks rather than wait for the city which gives some additional value to the market value of the lot, as compared with a neighborhood where you have not got those improvements.

The same situation that I have just given applies to the 182 lots sold. Those are intermingled blocks. You find some of those lots sold in the same blocks with the 209 lots and as to the 248 lots they are scattered all over that section, that is to say, I find some streets that are graded and sewered. The same physical condition of streets prevails right through those. You will find one company selling 10 or 15 lots in a block, and the other company selling 6 or 10 lots in the same block and another company selling 2 lots in the same block. The 182 lots have been improved since the time that they were sold and that same situation [fol. 1518] holds true with reference to the 248 lots.

On this block between Winthrop and Wolcott Avenues there are no buildings whatever until you come down to the Boulevard at the East River. In other words, it is all vacant with that exception. Down there there are two good dwellings and barns and outbuildings in connection with them. In other words, no use being made of the property except at the bulkhead down at the Boulevard. On the east side of the Boulevard there are two residences there that

overlook the river, and oh, there is a little market gardening in connection with them. I think one chap has some of that land that he is cultivating for market gardening; but there are two good residences there. With that exception the rest of the land is vacant and not being used, unless you wish to call an amateur ball park up around Merchant Street an improvement. The 10 lots that were sold on Steinway Avenue at an average of $1,850 a lot. I guess we would call that East of Luyster Creek from the Gas Company's property. I generally think of the river as running north and south and this would be east. There is an industrial development north of Riker Avenue running up to the bay and south of that it is a mixture, some dwellings and some shops, and in the general neighborhood of Kouwenhoven, Steinway and Riker, which is still further to the east, it lays vacant for many years and is now being built up with residences. There east of Luyster Creek, all those streets were graded a good many years ago and I do not think that a sewer was put through there for a long time. I think there is a sewer in Riker Avenue today. I am not [fol. 1519] positive about that, but I think that there is. I do not know what improvements were made on the 10 lots after they were sold. I did not pick up those particular ten lots to examine them, but I know that there is building out along the line of the Steinway Avenue cars out at Riker Avenue. They are not near enough to Luyster Creek to be usable in connection with the creek itself. They are a considerable distance away, and you would have no connection with the creek at all. I only spoke of Luyster Creek to give you a little idea of the general direction. There was another sale in 1923 of 20 lots just north of Winthrop Avenue at an average of $1,275 a lot. Out on Theodore Avenue, a considerable distance east of Luyster Creek, over towards Steinway & Second Avenue or Debevoise, where the subway trains run. Those streets are opened and I think that the grades are there, but I think that there is no sewerage in them, and that they have to carry a block or two to get a sewer. To Riker Avenue I think they have to carry. I am not certain about that question, but I think that is what it is. There is development going on there. There is a building development all along east of there. That was held by Stewart Hirschman as the chief owner of a lot development over there. The

Steinway people had some land adjoining his that never was sold out until Hirschman made some trade of them to the American Real Estate Company, and then American Real Estate Company sold them in batches and they began to be developed with houses. The Metropolitan and other insurance companies made them loans to build houses. Metropolitan Life made them loans on rather easy terms. [fol. 1520] Certainly tried to do their duty to help the housing situation. Those 20 lots lie near the neighborhood of the 10 lots in the Steinway Avenue section. I think there is such a difference in the character of the neighborhood as to the improvements, streets graded, and so forth and as to the account for the difference, of $1,275 for lots in there as compared with $1,850 for the lots in the Steinway Avenue section. Steinway Avenue is the open avenue around over to North Beach and for many years Steinway Avenue was known; now, Steinway Avenue lots would always command a little better price than the lots either east or west of it, but the same character of development is going on in the two neighborhoods. One and two-family brick and frame houses; and Steinway Avenue you know, for a long time has been a made street, paved and was the main trucking street for all that section. You went down Steinway Avenue, turned off to go into the Astoria Veneer Mills and you went over there originally to go over to the gas plant. Neither of these two sections, the Steinway Avenue section nor the other one are particularly convenient to the subway extension. No nearer to the subway than Chauncey Street here on these lots would be.

Block 849, Lot 1, I should think would be something around half a mile from Ditmars Street subway station. I do not think it is nearer a mile. I walked it pretty quickly, anyhow

The eight lots, the sale of which was in 1922 at $1,625 a lot is situated over east of Second Avenue to Theodore Street. That is in the same general neighborhood as those other lots that sold at $1,275, only they are south of Winthrop. They are not in a regulated and graded street sec- [fol. 1521] tion. Some of the streets have been made, to some extent, all through that old Steinway tract, but they were not finished up. I think that there were improvements in the neighborhood where the $1,625 a lot properties were sold. At the time I looked at them long ago there

was sewerage on some streets in there. That sewerage was carried over to Flushing Avenue, as I remember it. But the streets had been ploughed through, indicated; sometimes they were traveled. There has been work done on them since, but they were not completely finished and asphalted streets. Water, gas. The streets in which the 54 lots at $830 a lot were sold gives you Winthrop Avenue to Riker, Steinway Avenue to Albert Street. That is over at Steinway Avenue. They are not in the same neighborhood as the Steinway Avenue lots which brought $1,850 a lot. I think these were on the other side where there used to be a little wet land, where the old creek backed up and went around north and came back. Streets are laid out there, but never any great amount of work done on them. There is some building going on there, but not nearly as active as west of Steinway Avenue. The character of the building- are generally one and two family houses, sometimes frame, sometimes brick. There are streets laid out in there, and mapped. Sometimes they are ploughed through and one or two of those streets over there that have sidewalks; when you come down towards Riker Avenue that ground over on the east side of Steinway Avenue gets to be rather old land. If you go back two blocks east of there, you are in rather wet land. I think probably some of those 54 lots have been filled in. It was rather low land originally and I think some of it has been [fol. 1522] filled in at the back. I did not notice whether they had been graded since or not. They were sold to one party. Each time there are sales from one party to another. I think most of these sales were made to builders; people who intend to build, development companies. You notice that the Astoria Community Company, that was a house-building company. You have one or two construction companies. Fradco Construction Company, Nador Construction Company, H. & S. Construction Company. There is a Herald Homes Building Company and a variety of those people there. There has been a great deal of building done over in there. The neighborhoods in which were sold the 33 lots at $1,850 a lot compare with the neighborhood in which the 8 lots were sold at $1,750 a lot in this way, there is a difference in there of 10 blocks east and west and a difference of distance three blocks north and

south, rather hard to compare; but when you get over into Fifth and Sixth Avenue, that is all good upland over there and it has been developed over there with one or two family houses. In the two sections there are regulated and graded streets and sewers and improvements going on. All that section back of the Industrial Settlement in Astoria is growing up in dwellings. I do not think there is any comparison between the 12 lots at $5,900 property and the property here at all, but I take any sales that I find and make a note of them. Those sales on Second Avenue, or Debevoise Avenue, those are the streets where the elevated extension of the subway runs, and are near a station, and would be business property instead of residence property. It is in a pretty well settled section to bring $5,900 a lot. [fol. 1523] In other words, that section has not got the same period of development to go through as these lots that you appraised here. There would be no comparison. They would not be a good comparison at all for the establishment of values.

By the Master:

On this property, on Chauncey Street I gave $500 a lot and on Wolcott Avenue $1,200 per lot. Those street lots run five and six hundred dollars a lot, and Wolcott Avenue $1,200 a lot, Wolcott Avenue being the one improved street which is all ready for building, and the land on both sides of it lies level with the street grade and could be improved at once. The others take into consideration the undeveloped character of the street and the difficulty of grading to the grade of Winthrop Avenue.

By Mr. Donnelly:

I did not figure Block 849. I have one corner lot on Winthrop Avenue, corner of Chauncey. The corner of Chauncey and Winthrop, the corner I have thrown on Chauncey, I fronted eight lots on Wolcott Avenue and two corner lots fronted on Wolcott Avenue, I fronted 34 lots on Chauncey Street, and the corner lot of Winthrop I fronted on Chauncey Street.

By the Master:

I faced all the lots practically on streets, Winthrop Avenue being in such a difficult physical condition, I fronted the lots on Chauncey.

By Mr. Donnelly:

In the case of each block, 859, 860, 870, 871, 881 and 882, I put one of the corners facing on Winthrop Avenue, that is the corner of Goodrich and Winthrop Avenue, it is faced on Goodrich Street, for instance. That is not the way you faced them. They are all faced on the street. Winthrop Avenue presents a steep bank of gravel varying in height from ten to twenty feet, so running along there I just face all the lots on the street and faced the corner also, but these [fol. 1524] are only paper streets. All these streets are legally opened with the exception of Marchan Street and Barclay Street which are not legally opened. Winthrop Avenue and Wolcott Avenue are legally opened. They are physically opened, and traveled. That condition of the bank of gravel and so on exists all along Winthrop Avenue in so far as these blocks are concerned. From Van Alst Avenue east, west of Van Alst Avenue down to the river it is practically on grade. The land is practically on the grade of Winthrop Avenue. In the case of Block 893 I fronted lots on Van Alst Avenue, which is an open, wide, traveled street, and so I fronted the lot at the corner of Winthrop Street on Van Alst Avenue. In block 894, I fronted some lots on the Boulevard and I made a corner fronting on the Boulevard. A corner lot on the corner of Winthrop and Barclay I fronted that corner on Barclay Street. Then I had some inside lots on Winthrop Avenue and fronted a few lots on Winthrop Avenue. Speaking of Block 894, the southeast corner of Boulevard and Winthrop, I gave a corner lot facing on the Boulevard. On Wolcott Avenue I fronted all the lots, corners and all on Wolcott Avenue. Block 894 has a frontage on the Boulevard and the Boulevard is a traveled street. Just now it is a country road. I expect it to be a 60 foot street. It is open and in good condition for travel.

Block 895 has a frontage on the Boulevard and runs down to the bulkhead line in the river. It contained 120,000

square feet at 20 cents a square foot. My opinion of its value was 20 cents. I couldn't find a sale of anything just like that, but I think it would probably cost to bulkhead [fol. 1525] 800 feet there at least $80,000 and there would be something for filling, and after you got it I didn't think you would get any particularly high value per square foot anyway. The entire block 895, Lot 1 is land under water. It could be bulkheaded. The bulkhead on the large piece of the gas company's property on the north side of Winthrop Avenue extends out into the water about 150 or 160 feet and you can fill that bulkhead right along if you wanted to. The unit of 20 cents a square foot is its value now before any physical work is done on it. I figured it would be an expensive job to bulkhead and fill it, and therefore I should not allow very much for it in its present condition, so I gave it a value of 20 cents a foot. It is a peculiar piece of property being that very narrow rim and long front, and the condition of the river at that place gives you a place of swift currents. I do not know just how valuable it would be, but I figured I could easily go out and sell it for that price, and that is about what I could get for it. Of course, the property would have no real value for use, unless it were filled in and bulkheaded, but it might very well be that a man who desired that Boulevard frontage for a residence would be charmed to have that waterfront there with his unobstructed right out over to the river, and he might possibly want to tie a little boat up there, put down a pier, he would have that right, put up a tying pier and boathouse. It might very well have some advantage for that. You could put up a tie pier up there inside of a thousand dollars and I could put up a boathouse for $2,000 if I wanted it. I should judge Block 895, Lot 1 to cost about $80,000 to bulkhead and fill. I have asked a great many times, I have heard a great many [fol. 1526] dock builders testify what it would cost to bulkhead, and I have heard them tell what it actually did cost in specific cases where they had bulkheaded, and with that information I guess it would cost $80,000. I would lump the bulkhead and fill altogether. I can give you no better basis by which to arrive at $80,000 as the cost of filling and bulkheading there, that is all I would say. I haven't figured what the material would be used as a fill and I didn't even estimate how many cubic yards of fill I assume would be

used. I have heard people say that they bulkheaded and filled certain frontages where the water would not be of very great depth, and it would cost so much money, and I took that as a fact. I am not a dock builder myself, but I took as a fact what I heard other people say. I mean you could put up a platform pier for less money than you could bulkhead and fill. All I could give you about how much it would cost to build a pier there would be the information I have gathered in the pursuit of my business. I have had offers for building plaform piers of that kind at the rate of $2 per square foot. That meant driving the piles and tying up with a stringer and the laying of a platform. I have never built a pier, but I have heard lots about them, that is all, from people who do build them.

Block 1456, Lot 17, I have not testified to this previously. I testified to the adjoining properties. Speaking of the sales on which I based the valuation as to Block 1456, Lot 17 the sales for the adjoining property would apply here.

Referring my valuation of $199,000, I have given two corners there at $15,000 each. I faced the corner on Avenue [fol. 1527] A. I would not think of facing them on either East 62nd or 61st Street. I think Avenue A is the more important thoroughfare and I would front as many lots as I could on that thoroughfare. I examined this property. It is improved garage property and the entrance to the garage is on Avenue A or on the side street. I didn't really examine to see whether there was an entrance on either 61st or 62nd Street. I was not interested in the building; I was interested in the land. I covered the sales there by the sales I gave for the adjoining property, and speaking of sales, the same thing holds true of Block 1457, Lot 17. I faced the corners on Avenue A. On Lot 17 there may be a gas holder. I know there was a garage there and for the moment I was thinking of that garage on the front. The corner on Block 1475 was on 61st Street on Avenue A. I faced the corner on Avenue A and treated all that as Avenue A property.

Block 1978, Lot 37, I did not find any sales of vacant land here in any recent period. There were sales in and about that section some years ago when the property was being developed. It was sold and there was building activity, but there have not been sales recently of vacant land, so I placed a value on this land quite largely from remembrance

of transactions that went on eight and ten years ago as being about fair for these lots today. I find in conversing with builders and buyers and with salesmen that they do not seem to appreciate these lots up in this general neighborhood much more than they did back in 1906. At that time these lots were worth fifteen or seventeen thousand [fol. 1578] dollars apiece. The situation has not changed as to the value of lots.

For 123rd Street my unit is $15,000 a lot as compared with $14,000 for 124th Street; little difference in the grade of the streets and as to the formation of the land. That is more or less crowning land. I thought there would be a little more rock on there. Things have not been very active in the real estate line there in the last ten years. There have been, of course, a considerable number of sales of tenements but I mean there has been no particular building activity in that neighborhood. It has been south of there and west of there, and then skip up on Washington Heights, but there has not been much building development right here. There have been considerable sales of tenements in this section. They did not furnish any guide to me as to the present market value of the property because we know this, that right in there those flats have been speculated in very materially, and in those cases you have got land on which the irregularities of the land have been taken off and it is incorporated in the value of the building. In the days when those houses were built you could take one of these lots and clean the rock up and get down to a cellar foundation, for perhaps a thousand dollars. Some of these lots today would cost you three or four thousand dollars to get the foundation and taking those changes into consideration I did not feel that there was so very much to be gained out of sales of tenement properties, although there are other sections of Manhattan Island in this case where I took sales of tenements as guides because I know that those particular [fol. 1529] sections, take them all down through Avenue A, Avenue B, Avenue C, Avenue D, they never were speculated in, they have not been speculated over much since 1906. They are just beginning to turn around, and if I should produce sales that have been made over there in the last few months, if I treated those in the same way I would get land

values almost sixty to one hundred per cent higher than I gave.

I valued Block 989, Lot 16, but I thought it was not in this list. It is worth $164,000. I have that calculation, and I certainly must have made it. The same sales will apply as applied to 989, Lot 1.

Redirect examination by Mr. Ransom:

Referring to the property at 474 West 159th Street that neighborhood comprised many tenements. I used the word "Tenements" there in the sense in which I later explained it with respect to other properties. A tenement house is a multiple family house. Of course, that is not a cold water tenement. This is a neighborhood I like to speak of as apartment houses, but I speak of them technically as tenements because they are multiple family houses. I would say ordinarily that auction sales of vacant land produce low prices as compared with the standard sales in any neighborhood where lots have been sold at private sale. I do not think that that type of auction sale in the ordinary sense of brokerage, represents a willing seller and a willing buyer bringing about a meeting of minds because we do not differentiate in length of time as between the buyer and seller. They make up their minds at that time. When we sell large quantities of land in the shape of lots at auction, we do not expect to obtain the prices which are obtained for [fol. 1530] immediate adjoining lots sold one or two at a time by private negotiation. With respect to such sales of vacant land, as a general rule they have an element of compulsion on the part of the seller; the party feels impelled to clear up or to sell out a large holding and do it all at once, and he could not very well find a large number of individual purchasers and take that off through private trading. Therefore he puts them at auction and gets a crowd together and disposes of his entire holdings at one time, and he has the opportunity of making his own terms to each and every purchaser at one and the same time. I did not consider the auction sale of the Simpson Estate property adjoining the new Hunts Point plant location of the plaintiff, on the basis of selling lots, as an auction sale reflecting a sale of the property to good advantage, a good sale. I have known of offers being made for the property in the

Simpson estate much better than obtained here, that have been refused. I do not regard a sale of that type of property by lots as the most advantageous sale in that locality. I do not regard the sale of the Dickey property, which was up at the Bronx River from the New Hunts Point plant location of the plaintiff as a sale under conditions comparable to those determining the value of the Hunts Point plant and property. Near the old homestead at Lafayette Avenue and Hunts Point Road that was good upland and then it sloped up rapidly to the northeast into unfilled meadow. The one street that was graded was probably 10 to 25 feet above the level of the meadow and it showed the lots up in a very bad light. There was no filling done on that except the grading of one, I think there is one street graded across that. It was about a mile up the Bronx River to the near- [fol. 1531] est point of the Dickey estate from the most westerly part of Hunts Point. In my opinion, the property along the Bronx River that far off from the mouth of the Bronx River at its junction with the East River would not be as valuable a property. Some small pieces might be sold at a fair value and above. Not as a waterfront property, no, because it can only be used by a light draft vessel. It is really only usable by barges and small tugs.

I said in my testimony at page 4863 of the record, that the presence of a gas plant in a given locality had a depressing effect upon real estate values in the vicinity and that I had taken that effect into account, and used the term that the presence of such a plant was a "nuisance" in the neighborhood or had nuisance elements. I was using that term purely in the colloquial sense. It tends to limit the available uses of surrounding property and to depress the price, consequently, at which the surrounding property may be sold, as long as the plant is there, and in all of these values which I have given, I have taken into account the effect of the property in the neighborhood in which it was. If the land was sold as vacant land and there were no gas plant at that point, I think, in almost every instance, the values would be much greater than the values I gave.

And, with respect to the so-called Kingsbridge holder property on Fordham Landing Road, which is now called West Landing Road, the various uses which I said that portions of that property might be put to an- which I assumed

or took into account in my appraisal, based upon the fact that the land would be entirely vacant, that the gas holders were taken away from there. I cannot fix the exact date [fol. 1532] when portions of this plot were put in the hands of our company for sale to see if any part of it could be sold, with the continued use of the part by the gas company which it required. I should say somewhere in 1920 or 1921 our salesmen had portions of the gas company's property at Sedgwick Avenue, which they were trying to sell, and I can remember on two or three occasions on which they came to me and asked me for some opinion of value and asked if I thought that certain kinds of improvements would be advisable. Personally I do not think the property would be attractive for improvements either as a private residence or apartments, as long as the gas holder is there. In view of the other available sights for residence and apartments in that neighborhood, a site so closely in proximity to the holder, I do not believe would be attractive at all to a builder to put up either private houses or dwellings on this property, as long as the gas holder is there.

By the Master:

There is no call for business north of it. There is no present development of houses or any traffic that would warrant any man in putting any stores or business houses on Sedgwick Avenue north of the gas plant. On Harlem River Terrace, certainly as time goes on someone may want to step in there and put in a garage or something of that kind, someone that would not consider the gas tanks as a nuisance.

By Mr. Ransom:

The land along the unpaved and present condition of Harlem River Terrace, I do not think would be as attractive at the present time for garage development. I do not think Harlem River Terrace at the present time, in its present physical aspect, is not a traveled street to any extent. You can go through with a light car, I suppose, go up to Sedg- [fol. 1533] wick Avenue, but nobody would choose to do that. I do not know what the grade of Harlem River Terrace at the present time is. It is below the grade of the

Fordham Landing Road, and it runs down there, but I am only considering it in its present physical condition as a dirt road, and I know it is a very bad road, as you go up towards Bailey Avenue, where it comes out. It would not be attractive at all. I am only speaking of it as it is now. Sometimes it may be advantageous, it may be used by some business that does not consider the presence or proximity of a gas tank as a nuisance. If I were running a gas plant, I have an impression, I would not care to have any possibly inflammable substances around me more than I had in the gas holder itself. I would not regard all of the northern portion of this property as salable at any substantial price for business purposes at the present time. It might be. I do not consider that it stands out in any way as being so desirable that there would be any immediate sale for it. I simply say it is possible. I can think of a great many places in the City of New York where I can get as cheap land, with the equal advantages, without any presence of any gas tank, that would be just as suitable for almost any business I can think of. There is nothing particularly attractive about the property that would cause a man to choose that in preference to a hundred other locations where he could buy land that cheap or cheaper.

There was a site at one time acquired at the foot of Kingsbridge Road and Bailey Avenue, the northeast corner, acquired by the Consolidated Gas Company upon the [fol. 1534] Barney estate, and I know that there was a report that there was to be a gas holder erected on that plot, and I know that I made some inquiries about the sale of it, and it sold at about $3,000 per lot. We held an auction sale in there in 1907, and it was a year or two after that, somewhere in 1909 or 1910, that this transaction took place, and sometime later I made inquiries, I think, of Mr. Franklyn of the Gas Company as to why that holder never went up there, and they said they found a bad bottom and could not put up the holder.

Recross-examination by Mr. Chamberlain:

I know the Woodrow Wilson Apartments, but they are placed fronting on the park and they are out of the sight of the gas tanks very largely, and they are separated by one or two streets, and by some building sites and all that. I

observed dwelling and apartment houses on the south side of Fordham Road. There are some near this gas plant, and there are some businesses on the north side of Fordham Road near the gas plant, a garage and one thing and another. That is on the west Fordham Road and not on the Landing Road. Of course, they run through the block to the Landing Road. They are just as near to the gas plant as the northern part of the tract here in question.

Redirect examination by Mr. Ransom:

Referring to the appraisal which I place on the Astoria property, in my opinion that property could now be sold for as much or more than the figure which I stated, if it were given to our office, for at least the price we put on it. I might say, if we put it on the market right now, I could dispose of it very quickly to one customer. You will not find a customer like that every time.

[fol. 1535] Recross-examination by Mr. Donnelly:

When I spoke of meadow land, any land that is overflowed at tides is swamp land, that is speaking of that kind of land along the river front and that land in there is silt unimproved. Most of that is silted land. Referring to along the Bronx River.

Speaking of this so-called Kingsbridge holder site up there on West Fordham Road, when I testified that the land on Harlem River Terrace is suitable for business because there is land between the bulkhead line and the railroad which is being filled in and presumably will be used for business, and that the nearness of this property to the 270 foot bridge would afford good trucking facilities into Manhattan and the Bronx, I did eliminate from my mind, in giving that consideration to it, the fact that there was a gas holder there, in all that statement I am picturing to myself the gas holder removed. I am asked to appraise land there and I am eliminating from my mind, in every case, any building on any piece of land to which I am testifying. I do not mean to say that *that* with that gas holder there, on the West Fordham Road, that part of the property or the other part of the property could not be devoted to business purposes. That appraisal is based entirely on the

land, unimproved, no gas holder there. That, of course, was to get a possible use for Sedgwick Avenue. I certainly would not think of putting flats and dwellings down on Harlem River Terrace, facing the railroad, with the possibility of the suggested water site business being carried on across the track, but it would be suitable for business. Now, the presence of that gas tank might influence some [fol. 1536] businesses to locate elsewhere, but I would not say that some business enterprise might not be induced to locate up on the Harlem River Terrace front of this property. I gave a value of $265,000 despite the fact that there were certain topographic features there that were more or less objectionable and I made no attempt whatever, to assign to any particular part of this property any different value from any other part. I made no attempt to separate the parcels so as to divide them into the part occupied by the gas holder and the pumping station which is there and to give a value to that part of it as compared to the value of the rest of the property which is vacant. I would not say that could not be done; anything can not be done, but I cannot believe it could be done in a satisfactory manner. The presence of a gas holder and a pumping station there presents a difficulty, and that difficulty would apply in valuing a part of the land which is vacant. I think it is encumbered with what I considered to be a nuisance, and I do not feel capable of stating its value with the nuisance present from its value, without the nuisance. The portion of the record which (Mr. Donnelly) read was on mimeographed pages 4227-4728, as to the possible uses of this property, that was based on the assumption stated by me immediately before what he read, "assuming that all the land were entirely vacant." I assumed in every case in which I made appraisals, that all the land was entirely vacant, simultaneously all over Manhattan and everywhere else. That all these parcels were vacant as to which I testified.

Redirect examination by Mr. Ransom:

I never heard of any offer being made to my organization for the sale of any part of the Harlem River Terrace side [fol. 1537] of the Kingsbridge holder site for business purposes. There was never any one made in my presence.

May 2, 1924.

[fol. 1538] Met pursuant to adjournment.

HENRY M. BRUNDAGE, a witness in behalf of the plaintiff, was recalled for further direct examination.

Direct examination by Mr. Ransom:

I have been at work in the preparation of schedules for the purpose of showing the original cost of the property of the Consolidated Gas Company as charged in the capital accounts on its books. This work has been done by me and with many of my assistants. As a result of this work, I have prepared various schedules which have been furnished to the defendants. Schedule A, entitled "Consolidated Gas Company, New York, Detailed Statement of the Cost of the Company's Real Estate including Improvements thereon other than Manufacturing Plant and Holder Stations to and including December 31, 1923" is one of the schedules which I and my assistants have prepared.

(Marked Plaintiff's Exhibit No. 820 for identification).

The first nine sheets of this Schedule A—that which bears the caption "Consolidated Gas Company of New York, Book Value of Real Estate," show in a summarized form the cost of the company's real estate at each of the locations indicated at the top of the pages, at the end of each of the years, from the consolidation on November 11, 1884, to December 31 1923, and leading down to a summarized total at the bottom of the ninth sheet. That is, each of these columns on the first nine sheets relate to different stations or locations at which the Consolidated Gas Company has real property, and the first nine sheets show the book cost of real estate at each of these stations, year by year, at the end of each of the years. In other words, these [fol. 1539] first nine sheets are essentially summary sheets of our details, which details are given in the following sheets. With respect to each of these locations and with respect to each of the years shown on the first nine sheets, the details of the amounts set out in the subsequent sheets of the schedule are in great detail and by locations. For example, the sheet entitled, "Real Estate, 11th Street Sta-

tion," on the first sheet, that column is blank, and on the second sheet down to the year 1922; no real estate was acquired by the Consolidated Gas Company at this 11th Street Station prior to the year 1922. The column is blank until we acquired this property, and I therefore, set it up from that time on. And then, in the subsequent detailed sheets, we have the details of the real estate acquired at the 11th Street location in the year 1922. I took all this information on the sheet "Real Estate, 11th Street Station," from the books of account, already in evidence. The year 1922 on this sheet for the 11th Street Station indicates the year during which this property was acquired and in which the purchase was made, and the sum shown as its cost paid. The words "Purchase Price" on this detailed sheet refer to the purchase price to the Consolidated Gas Company of the property at the 11th Street Station. That is, I mean the price of the land at that station. This was all the manufacturing station. In other words, the purchase price in these detailed sheets indicate the sum of money paid by the company for the acquisition of the land or other property, [fol. 1540] as shown by the books which were previously put in evidence, and this sum of $1,163,135.67 for example, stated on this detailed sheet as the purchase price is taken from the same source.

As another example, taking 14th Street station, which is the second of the locations—underlying that as shown on the first sheets, there are detailed sheets which give information about that station. The information set forth on the detailed sheets entitled "14th Street Station, Real Estate," was taken from the books of account already in evidence, and it is desired to set forth here the cost to the company of the land at the East 14th Street station from the date of organization, November 11, 1884, to the date at the latter part of 1923 when the property was disposed of. There are two columns in this detailed sheet. I have made this schedule out in the ledger form, for the purpose of showing the debits—that is, the money paid for these assets on the left hand side, and the details as to the acquisition of the property, and over on the right hand side I have shown the details of the property disposed of. Now, the figures as to years in either column indicate the year in which the

payment was made for the acquisition of the land or part of the land and, in the right hand column the year in which the money was realized from the sale of any part of the land. Those years indicate the years in which these transactions happened, or the taking of any part of the land in condemnation. The figures as to the cost and the acquisition of the purchase of any part of the land as shown on the left hand side of these detailed sheets are taken from the [fol. 1541] books and underlying records. The items on the credit side show the cost of the property to the gas company at acquisition and when the property was sold there was credited to the Fixed Capital Account that exact amount, irrespective of the amount for which it was sold.

Any variation between the cost of the property and its selling price is charged or credited to the company's Profit and Loss Account for Land. We only credit the Capital Account, with the exact amount at which the property disposed of was originally entered in the Capital Accounts. That is, when it is acquired it is put in the Capital Account at the amount we pay for it, and when it is sold, it is taken out of the Capital Account at the same amount. That is, according to the Uniform System of Accounts.

My indicated explanation of the manner in which I have made up the tables shown on this sheet as to real estate, 14th Street Station, applies to the details shown on the other sheets in respect to land in other locations. The penciled items on these schedules are credited items. They are deductions. That is, they were shown in red ink on the original typewritten form, and in order to prepare this exhibit to be photostated, I am obliged to put a circle around them to identify them. Those show in those particular years the amount of any deductions from the Real Estate Account. There are credits all through those various schedules. The items that are circled in the summary sheets are shown in order that the cumulative total brought down from [fol. 1542] year to year will be in exact accordance with the books of account and also that the credit will be reflected in the detailed sheets. The details with respect to those credits are shown in the detailed sheets, and the insertion of these items in the summary sheets 1 to 9 only make these a correct and cumulative summary. Where they are not circled, those are additions to real estate.

On the eighth page, headed Shadyside, New Jersey, this column headed "Assessments" means these are assessments for public improvements against all our properties, all over. That is, in connection with the administration of public affairs of the City of New York various assessments have been levied against our property. They are for public improvements and have been paid. And, under the Uniform System of Accounts, they become an item in our Capital Account, properly capitalized as a part of the cost of the real estate, and the details of those are shown in the last schedule, headed "Real Estate Assessments," year by year from 1886 down. When our property is within an assessment district where there is a public improvement or an improvement is made along one of our properties, in either event they become an assessment which we have to pay.

The last column total is the cumulative total of all our real estate, plus the assessments. That is, in other words, the total for all real estate of the company, its book cost as of December 31, 1923, as shown by its books is the figure shown at the end of the right hand column on the ninth page of these summary sheets.

This Schedule AA includes both property which is used [fol. 1543] and useful in the company's gas business and property which is not claimed to be at this time and for the purposes of this case used and useful. This includes all of the company's real estate at December 31, 1923, and its actual cost to the company, entirely irrespective of the claim for the purposes of this case, whether it is claimed to be used and useful. In the prior 1919 case Mr. Carter was at that time my superior officer and he directed me to have a tabulation such as is here shown prepared for the case and I did so, starting from 1884 and bringing it down to December 31, 1918. Most of that work I did with my own hand and a number of my staff helped at the time, and we got together a voluminous tabulation of exhibits similar to this and presented them, and they were accepted by the Court in this prior case. They were checked by Mr. Carter and subsequently testified to by him. Now, in this case I have taken the schedules as we prepared them for the prior case, brought down to December 31, 1918, and have continued that work down to December 31, 1923. That is, I added the addi-

tions and deducted withdrawals for the five-year period following, in the same form as I prepared them for the prior case, down to December 31, 1918. I personally verified the additions and withdrawals as shown on these sheets. I have verified the balances at the end of each of the years against our general ledgers. I used the letters AA to identify, for example, this present schedule, Plaintiff's Exhibit No. 820 for identification. I followed the procedure [fol. 1544] in the former case. In the former case the schedules that I have referred to as having been prepared down to December 31, 1918, were marked A, B and C, and I followed the same sequence, bringing them down to December 31, 1923, and marking them AA, BB, and so forth. So this Schedule AA is Schedule A in the prior case, with the five years added, and the same applies to the other lettered schedules.

In Schedule AA, I have not made or indicated any segregation of land that at this time is used in the company's gas business from lands that are not claimed to be used at this time in the company's gas business. This is a complete list of all land at all locations so far as the Consolidated Gas Company is concerned. In preparing this schedule, I did not make any analysis of the operating accounts for the purpose of ascertaining what expenditures may have been made by the Consolidated Gas Company on account of land acquired or improvements made—expenditures in the nature of interest paid during construction and other undistributable structural costs which were not charged to Capital Account. This statement deals only with and I have only made reference to the fixed capital records of the company, and this is a summary only of capital accounts,—all of these schedules.

I have prepared schedules in which I undertake to show the cost of the properties of the Consolidated Gas Company which have been previously referred to as not claimed by the company to be used and useful in its gas business during the period covered by the present litigation.

[fol. 1545] This Schedule AA marked Plaintiff's Exhibit No. 820 for identification, is a true and correct statement as shown by the books of account of the Consolidated Gas Company in evidence and the underlying records showing the cost of the company's real estate, including improve-

ments thereon other than manufacturing plants and holder station, to and including December 31, 1923.

Schedule AA, marked Plaintiff's Exhibit No. 820 for Identification, was received in evidence and marked Plaintiff's Exhibit 820.

A schedule entitled "Schedule BB, Consolidated Gas Company of New York, detailed cost of the company's manufacturing plants and holder stations to and including December 31, 1923," was marked Plaintiff's Exhibit 821 for Identification.

This Schedule BB, Exhibit 821 for identification is one of the other schedules which I prepared for the purpose of showing the original cost to the Consolidated Gas Company of the manufacturing plants and holder stations owned by it as charged to its capital accounts. This was prepared from the same sources and in the same manner as I prepared Schedule AA. The sheets in the first part of this schedule are summary sheets arranged by years and locations similar to what I set forth in Schedule AA as to land, following the same procedure. These show in summary form the cost to the company of its plant and equipment at the various generating and holder stations as indicated at the top of the page and is brought down to the end of each of the years starting from the consolidation and carried through to December 31, 1923. And in the subsequent sheets are shown the details with respect to the different locations and the years and the different purposes for which the capital outlays were made, and on the opposite side I have shown the withdrawals according to the books, and in that way I reached a figure as of the end of each year which I carry into the summaries, and the summaries [fol. 1546] thereby become progressive or cumulative.

I prepared a Schedule B in connection with the prior suit of the Consolidated Gas Company against Newton, brought down to December 31, 1918, in exactly the same form. That was Exhibit 472 in the prior case, and this schedule takes the five years subsequent to that date and shows the additions and withdrawals in similar fashion. It has been checked by me in the way in which I have testified, and the detail sheets in this Schedule BB are set up in ledger form.

Schedule BB is a true and correct statement of the cost of the manufacturing plants and holder stations of the Con-

solidated Gas Company to and including December 31, 1923, as shown by the books of account of the company in evidence and the underlying records.

(Schedule BB, marked Plaintiff's Exhibit No. 821 for identification, was received in evidence and marked Plaintiff's Exhibit No. 821.

A schedule entitled "Schedule CC, Consolidated Gas Company of New York, detailed statement of the cost of the company's street mains and services to and including December 31, 1923.)

Schedule CC, which is Plaintiff's Exhibit No. 822 for identification, is another schedule prepared in form and in manner similar to Schedules AA and BB, but relating to mains and services, and it was taken from the same sources by me as the two prior schedules. I have started with the facts as of consolidation and brought them down year by year and shown at the foot of each year the cost of the mains and services at the end of the year. That is, with respect to each year I have shown the quantities laid and the cost and the mains taken up or abandoned and their cost, and the net increase or decrease and then the total at the end of each year. The figures that are circled with pencil marks in this Schedule CC would be in red ink if this were a type- [fol. 1547] written form. That indicates a deduction. With respect to the particular size or kind of main opposite which it appears, I first show mains and then services, and I carry the cost of mains to a cumulative total as of December 31, 1923, and services the same way. This is a true and correct statement of the cost of these mains and services of the Consolidated Gas Company, to and including December 31, 1923, as shown on its books of account in evidence and the underlying data. I prepared in the prior case a corresponding schedule of mains and services, brought down to December 31, 1918, known as Schedule C, Plaintiff's Exhibit 473, and have brought it down to December 31, 1923.

(Schedule CC marked Plaintiff's Exhibit No. 822 for identification, was received in evidence and marked Plaintiff's Exhibit No. 822.

A schedule entitled "Schedule DD, Consolidated Gas Company of New York, Book Value of Meters and Miscellaneous including Meters, Cocks and Connections, Fur-

niture and Fixtures, Horses, Wagons and Harness; Tools and Implements; Scows; Gas Appliances Rented; Automobiles and Accessories; organization; other Intangible Capital from date of Consolidated to December 31, 1923," was marked Plaintiff's Exhibit No. 823 for identification.)

This Schedule DD, Exhibit 823 for identification, is another one of the schedules which I prepared from the books of account and underlying data of the Consolidated Gas Company. It was prepared by me and under my direction in the same manner and from the same sources as the prior schedules which have been received in evidence. A corresponding schedule was prepared and placed in evidence in the prior suit of the plaintiff, and brought down to December 31, 1918, marked Schedule D, and known as Plaintiff's Exhibit 474, I believe. In this Schedule DD, I have set forth in the first three sheets a summary of the balances for each of the classes of property indicated with respect to each of the years from 1884 down to 1923, and in subsequent sheets I have shown the details of the expenditures for any of those classes of property and of the withdrawals [fol. 1548] therefrom year by year which are shown and summarized in the first three sheets. As to the items shown on the last two sheets for "Investment in Organization" and "Investment in Intangible Capital," that first item Investment in Organization represents the cost of financing during the year indicated, which under the provisions of the Uniform Classification of Accounts are required to be capitalized under that title, "Organization." The other item, "Intangible Capital," represents a portion of the undistributable purchase price that the Consolidated paid for the property of the New York Mutual Gas Light Company, which was not specifically assignable to items of fixed capital. That is, that purchase price was made up on a basis which included various undistributable structural costs, and all except this item were distributable and distributed, and this was the component part of the price fixed by the Commission. I filed with the Commission a statement under its order of the way in which I had entered those various elements of the purchase price. I was required to do that.

In making up this schedule I have shown in summary form the cost of each of the items of property as of June 30, 1922;

December 31, 1918; June 1, 1923 and also as of December 31, 1923, so as to enable a comparison with the findings of any determination of any tribunal as of each of those dates. [fol. 1549] At the bottom of that page is a sumary as of May 31, 1923, from May 31st, and brings it down to December 31, 1923. With respect to this schedule the figures in circles or in red ink have the same significance as in the other schedules, throughout all these schedules. Credit is shown with a ring around it.

(Schedule DD, marked Plaintiff's Exhibit No. 823 for identification, was received in evidence and marked Plaintiff's Exhibit No. 823.)

(A schedule designated "Schedule EE, Consolidated Gas Company of New York, Real Estate, including improvements thereon other than Manufacturing and Holder Stations, not claimed to be used in the Gas Business; Subschedule 1 as of June 1, 1923; Subschedule 2 as of December 31, 1923; Subschedule 3 as of December 31, 1922; Subschedule 4 as of June 30, 1922," was marked Plaintiff's Exhibit No. 824 for identification.)

There was a similar schedule to this Exhibit 824, Schedule EE, in the prior case down to December 31, 1918, and that was Exhibit 475. Schedule EE is another of the schedules prepared by me, and the figures which it contains as to cost of property were obtained from the books and underlying records. These two sheets of Schedule EE represent the cost of the company's land at the locations stated, which are not claimed as being used in the gas business as of June 1, 1923. They are the properties which Engineer Alrich did not testify to as having been used in the business, and I have followed Alrich's classification of property used in the gas business, and the property owned by the company not used, as testified to by him, is listed here. The amounts for the several parcels of land described on these two sheets are the same amounts for which these same properties were shown in Schedule AA, and that data in turn was taken from the books of account and underlying records. These are the original costs as [fol. 1550] included in Schedule A, listed here as not used in the gas business.

The general office property at 130 East 15th Street, on the first two sheets of Schedule EE, is shown on page 1. With respect to that, I made a deduction from the cost of the general office property as representing that portion of the property not claimed in the gas business but rented to others. I took the figures that were determined upon and used by Mr. Teele as a result of his exhaustive study of that question. Mr. Teele determined and used a percentage, and I used the same percentage—61.80 per cent. That is the rented portion of the General Office Building, both land and building, not claimed to be used in the plaintiff's gas business as of June 1, 1923. Mr. Teele determined what portion of the building was not used by the company in the gas business. I followed his figure. In other words, in making up this schedule of investment in real property to be eliminated I took from Schedule AA 61.80 per cent of the General Office property. Each of the other statements contained in Schedule EE were prepared by me in the same manner and from the same general sources as I have just testified. As to the sheets of Schedule EE which are marked and numbered "2" and bear the caption "Real Estate" and so forth "not claimed to be used in the gas business as of December 31, 1923," these sheets differ from the sheets relating to real estate not [fol. 1551] claimed to be used in the gas business as of June 1, 1923, and shown on the first two sheets of Schedule EE, in that there are several variations during that period from June 1, 1923, to December 31, 1923. The classification of the property not used in the gas business as of December 31, 1923, differs from that of June 1, 1923, to the extent that there is a parcel of land on the north side of 42nd Street, Block 1090, Lot 23, which formed a part of the 42nd Street plant and which, on October 31, 1923, went into the category of property no longer used in the gas business. We sold the 42nd Street plant on or about that date, so that the land covered by the 42nd Street plant is shown in Schedule AA as having been withdrawn at that time in 1923. We still owned that land on December 31, 1923, on the north side, but the 42nd Street plant property having been sold, this property, Block 1090, Lot 23, could no longer be claimed as used in the gas business; so I have included it in my

deductions in Schedule EE-2 as of December 31, 1923. I followed Mr. Alrich's testimony with respect to the transfer of that parcel on the north side of 42nd Street to the property not used in the gas busines. There is another variation. As to the other variation as of June 1, 1923, there was included in our Fixed Capital at the East 14th Street station certain property which had been taken in condemnation proceedings by the City of New York. That [fol. 1552] is not shown in Schedule EE-2, because that property has since been paid for; that is, between June 1, 1923, and December 31, 1923, a payment by the City was made, and it disappeared from our capital account and is not included in Schedule AA as of December 31, 1923. In other words, in Schedule EE-1 there was this property at 14th Street which the City had taken in condemnation but had not yet paid for, and I had to show it here as an elimination from our property used and useful, but when the City paid for it it disappeared from our Fixed Capital account from my list of eliminations, and also from Schedule AA. Between June 1, 1923, and December 31, 1923, it having disappeared from Schedule AA, I no longer had to show it as a deduction. I notice still one more variation. As of June 1, 1923, the company owned a piece of property at Locust Avenue and 132nd Street. That was Block 2583, Lot 360. That is not shown as of December 31, 1923, because the property was sold. In other words, it is shown on the second sheet of Schedule EE-1 because it was owned on June 1, 1923, but not used in the gas business, and it having been intermediately sold, it disappeared from the list of eliminations.

Now, as to the two sheets of Schedule EE marked "3" and relating to the situation as of December 31, 1922, those sheets differ from the shets as to real estate not claimed as of June 1, 1923. There is a variation of a small amount [fol. 1553] in the general office property item, because, as I have already testified, for the year 1923 Mr. Teele's computations resulted in a deduction of 61.80 per cent, but in 1922 his computations showed 64.84 per cent, and having adopted his percentage in 1923 I followed the same procedure in 1922. That makes one variation. So that with the two or three exceptions of certain variations, the

classification of property as of December 31, 1922, is the same as that which I have already testified as of June 1, 1923, and the first of them is that I again adopted the Teele percentage as to the portion of the general office land and building which is not claimed to be used in the gas business as of that date. Now, there is a variation in the property at the West 18th Street station, occasioned by the fact that subsequent to December 31, 1922, we sold a parcel of land the original cost of which was $7,500. That property was sold before June 1, 1923, and so does not appear in the list of eliminations of property not used and useful as of June 1, 1923, but on December 31, 1922, the property was owned but not claimed to be used and useful. Consequently I show it in my December 31, 1922, statement as an elimination from Schedule AA. Now, there is also a variation at the 44th Street station. This item is occasioned by the fact that a part of the land located on Block 1092 was sold during that period from December 31, 1922, to June 1, 1923. The land cost us originally $41,000 and at the time of the [fol. 1554] sale it was treated as before, credited to fixed capital account, and it disappears from the Schedule AA and likewise disappears from Schedule EE-3. It was shown in Schedule EE-3 because it was owned at that time by the company, although not used and useful. It disappears from Schedule EE-1 because between December 31, 1922, and June 1, 1923, it had been sold and eliminated from the fixed capital accounts as shown in Schedule AA. Now, there is another variation due to a change in the ownership of property at Avenue A and 60th Street, Block 1474, Lot 24. Here was a case of having sold a parcel of land the original cost of which was some $66,000 and was treated in a similar manner. That is, it is shown in this schedule because on December 31, 1922, it was owned but not claimed to be used and useful in the gas business. I am referring to Block 1455, Lot 13; Block 1474, Lot 24. The lot that was sold is Block 1455, Lot 13, but Block 1474, Lot 24, appears in both schedules, December, 1922, and June 1, 1923. The other was sold. If I gave you the wrong one I would correct it that way. I would not say what Block 1455, Lot 13, was sold for. I would say that the original cost was about $66,000. It was sold and the retire-

ment of it amounted to about $66,000. I refer to the first sheet of Schedule EE-2, for Avenue A and 60th Street, Block 1474, Lot 24, $22,000, and also on the Schedule EE-1, the second sheet, the same item is shown. In other words, as of June 1, 1923, and December 31, 1923, that lot of which the cost had been $22,000 remained in the category [fol. 1555] of property owned but not used and useful. The elimination of the $66,000 from the fixed capital account, as to property at Avenue A and 60th Street, took place between December 31, 1922, and June 1, 1923, and consequently that $66,000 item disappeared from the list of eliminations in Schedule AA. I have covered now, I think, all of the variations from December 31, 1922, in the June 1, 1923, statement.

Speaking of Schedule EE-4, that is the schedule as of June 30, 1922. The basis of this statement that the items shown on these two sheets were those deducted by the Commission in arriving at the amounts as set forth in its opinion and order of the investment of the Consolidated Company as of June 30, 1922, is that as a result of the submission by us to the Commission in connection with its Case No. 79 of various data as to the investment of property of the company and the investigation and inspections made by the Commission, we submitted to the Commission a final statement showing what we claimed to be the original investment in all of our property and what was the investment in certain items of property which were then classified as not being used in the gas business, and the final figures found by the Commission agree with these final statements of original investment as of June 30, 1922, in all property, less original investment as of that date in property then classified as not used in the gas business. So in preparing this statement I have followed this classification in the [fol. 1556] schedule. The variations between June 1, 1923, and June 30, 1922, are due to certain differences in classification of property which I have set forth as of June 1, 1923, and the classification of property as shown in the final statements furnished by the Commission and necessarily used by it in arriving at its investment in the gas business. I have shown here on this schedule as deductions—that is, as property not used and useful in the gas

business as of June 30, 1922—the same items which I eliminated on the investment statements which I submitted to the Commission as of that date. I have so headed this schedule.

All of the amounts set forth in the respective items of property shown in Schedule EE, so far as Subdivisions 1, 2, 3 and 4 are concerned, are taken from the books of account of the Consolidated Gas Company in evidence, and underlying data. They show these same items of property at the same figures in which such items of property were shown in Schedule AA, and it is a true and correct statement prepared by me in the manner to which I have testified and from the sources which I have stated.

(Schedule EE marked Plaintiff's Exhibit No. 824 for identification, was received in evidence and marked Plaintiff's Exhibit No. 824.

A schedule, designated "Schedule FF, Consolidated Gas Company of New York, manufacturing plant and holder stations not claimed to be used in the Gas Business, sub-schedule 1 as of June 1, 1923, sub-schedule 2 as of June 1, 1923, sub-schedule 3 as of December 31, 1922, and sub-schedule 4 as of June 30, 1922," was marked Plaintiff's Exhibit No. 825 for identification.)

Schedule FF, which is Plaintiff's Exhibit No. 825 for identification, is another of the schedules which I have prepared from the sources and in the manner which I have just testified. There was a similar schedule prepared in the prior case, brought down to December 31, 1918, and placed [fol. 1557] in evidence in the prior action of the plaintiff. That was known as Schedule F, Complainant's Exhibit No. 476. Referring to the first sheet, relating to manufacturing plant and holder stations not claimed to be used in the gas business as of June 1, 1923, I prepared Schedule BB, which this was taken from, and which shows the cost to the company of all its plant and holder stations. These items of property and their cost appear in Schedule BB, and these items represent the property not testified to by Engineer Alrich as now being used in the gas business. That is, I have shown here as eliminations in Schedule BB the book cost of the different items of property which Mr. Alrich indicated as not used and useful as of June 1, 1923.

The moneys set forth for these various items represent the actual cost of this property as shown by the books of account already in evidence, with the possible exception of that last item of Engineering and Superintendence.

The item Engineering and Superintendence—for the purpose of this schedule I just want to refer to the fact that I have already testified what our method was, to capitalize in an account called Engineering and Superintendence the overhead cost of the Construction Department; then after the year is closed we prorate that expenditure among the companies which did construction work during the year, bill to them and get paid. I have covered all that in previ [fol. 1558] ous testimony. That is as of June 1, 1923, at which time—that is, for the five months ended May 31, 1923—the engineering and superintendence amounted, as shown by this schedule, to $43,500 odd. But later, after the year was closed, we spread that cost over the other companies, charging them to the extent of 61.22 per cent., and therefore to make this statement correct as of June 1, 1923, I have computed 61 per cent. of the $43,000 and included it as an item not to be claimed as used and useful in the gas business. That is, currently there had been set up every month and charged into our books the actual cost of this Engineering and Superintendence item, and it is shown in Schedule BB as of those intermediate dates in 1923—shown in Schedule BB, according to our books. When we subsequently billed and received the payment of the portion of it attributable to the affiliated companies, we set that up in this Schedule FF as a deduction, and that same method of eliminating the proportionate part of Engineering and Superintendence is applicable to each of the sheets, 1, 2 and 3 of Schedule FF. Sheets Nos. 2, 3 and 4 were respectively, relating to the dates December 31, 1923, December 31, 1922, and June 30, 1922, prepared in the same manner as Sheet 1, relating to June 1, 1923. They were all prepared in the same manner, with the investment in all our plant and holder stations as shown in this Schedule BB, and based upon the Alrich testimony and his diagrams as to the property used in the business, but making such [fol. 1559] changes as were necessary to revise the statement in accordance with the dates in these schedules we are talking about. That is, made up in the same manner as

Schedule EE with respect to real estate. This is a true and correct statement prepared by me in the manner to which I have testified, from the sources stated.

(Plaintiff's Exhibit No. 825 for identification was received in evidence, and marked Plaintiff's Exhibit No. 825.)

Referring to Exhibits 826 and 827 for Identification, designated, respectively, "Consolidated Gas Company of New York, working capital necessary in the gas business exclusive of accounts receivable from affiliated gas and electric companies, for the year ended December 31, 1922," and, similarly, for the year ended December 31, 1922, those statements show the amounts which, for each of the years mentioned, are required for the purposes of the company's working capital in its gas business. In making up these items, I have excluded from Accounts Receivable the amounts due from the affiliated gas companies. That is, the accounts receivable and amounts due from consumers and sundry debtors only, limiting it strictly to the gas business. I have eliminated all the amounts due from the affiliated companies, leaving only the gas business, and of course the account "Materials and Supplies" is all for the gas business. I have shown these Accounts Receivable and Materials and Supplies—Gas at the actual figure at the end of each month during each of the two years, and the Materials and Supplies is the actual book figure, month by month, the actual investment in materials and supplies. The column entitled "Necesary Average, Cash," is my [fol. 1560] judgment of cash which the company should always have on hand, for strictly gas purposes. I should say that if our cash is any lower than that, we should be very much alarmed. That is, as a working matter, I feel I ought to have a large sum.

As to the amount for "Gas Delivered but not Billed (Average)", that is a computation. That amount I have worked out there represents two-thirds of an average month's operating expenses. We know that our average index date is about the 14th of the month to the 14th of the succeeding month. We only get, in our Accounts Receivable, the bills up to the end of the month, so that there is 14 days that is not indexed and entered as accounts receivable and after the index is taken it runs from 4 to 6 days

to get the bills out and get them set up as Accounts Receivable, so I make it about 20 days as a good average of the amounts of bills representing gas that we have produced and distributed but not yet indexed. We have had to spend money and invest capital in order to produce and distribute gas, and we have to set that up before it becomes accounts receivable, and then it goes into working capital. We estimated that there is a period averaging at least 20 days for the investment before it becomes accounts receivable, and computed it on that basis, two-thirds of the operating month's expenses, and that applies both to the years 1922 and 1923. Plaintiff's Exhibits Nos. 826 and 827, marked for identification. These figures showing the aggregate [fol. 1561] amount of Accounts Receivable from Sundry Debtors applicable to the gas business have been calculated from the books of account in evidence, so as to show the monthly average.

This is a true and correct statement of the items of working capital that are taken from the books of account, or representing my judgment of what is actually necessary, prepared in the manner as to which I have testified, and that is true both as to the years 1922 and 1923.

(Plaintiff's Exhibits Nos. 826 and 827 for identification were received in evidence, and marked, respectively, Plaintiffs' Exhibit Nos. 826 and 827.)

I prepared this schedule marked Plaintiff's Exhibit 828 for Identification, and entitled "Consolidated Gas Company of New York, Summary of the Cost of the Company's Property Claimed to be Used in the Gas Business, exclusive of expenditures made, but not charged to the Fixed Capital for Interest During Construction, Engineering and Superintendence, and other Overheads and exclusive of Going Value as of June 1, 1923, December 31, 1923, December 31, 1922, and June 30, 1922," to indicate the matters shown in its title, as of the dates shown in its title. A similar schedule was prepared and received in evidence in the prior case covering of course different periods of investment, brought down to December 31, 1918. I believe it was Exhibit No. 496 in that case. I have endeavored here to bring together a summary of all these schedules just received, brought down to the different dates, and of course in doing that I have made deductions of the items of property not

used in the gas business during each of the years. For example, in Schedule AA, there is shown all the company's land. In Schedule EE I have already shown all the land not claimed by the company used in the gas business and in the summary I have deducted such amount so as to bring down in the tabulation now before me a summary of the amounts invested by the company in its property used [fol. 1562] for gas purposes. And, in the same way, I have eliminated from BB the amount shown in Schedule FF, and then I have brought it down to a footing, as you will note, and then I have deducted that portion of jointly used property used by others, comprised in the joint facilities report. I have made that deduction and then I have added the franchises and rights of the company at the figure at which they are carried on the company's books, and then I have added the working capital shown in the prior schedules, Nos. 826 and 827, and brought down to one total. For example, on the sheet for 1923, I have shown the total working capital as shown in Exhibit No. 826. I have applied in each case the working capital in each year, and, in making the deduction for jointly used property, I have used the Joint Facility Reports for each month, and with respect to the franchises and rights I have noted for convenience the reference to the decision of the Court in which that item has been passed on. I have simply taken the items from the books. That is the amount set up on the books pursuant to the statute, and the amount referred to by the Court in the two prior actions by this company and allowed by the Court. Now, of the four sheets which make up this summary schedule, they are all prepared in a similar manner and along the same lines as the first sheet as to which I have testified, and this is a true and correct summary prepared by me in the manner to which I have testified. Ex- [fol. 1563] cept in respect to the item of Franchise and Rights it is a summary of the other exhibits already received in evidence; this is just a summary of what has already been offered, and with that exception, it is a figure taken from the books.

(Plaintiffs' Exhibit No. 828 for identification was received in evidence and marked Plaintiffs' Exhibit No. 828.)

I have done work in preparing from the books of account of the Astoria Light, Heat & Power Company, a statement

of the original cost of this property used in the gas business. This schedule marked Plaintiffs' Exhibit No. 829 for Identification and entitled "Astoria Light, Heat and Power Company, Investment in Fixed Capital, January 18, 1899, to December 31, 1923," was prepared under my direction and I did quite some work on it personally. During the last trial of the Consolidated Gas Company's case I did work in connection with schedules as to the cost of fixed capital of the Astoria Light, Heat & Power Company which were placed in evidence. Most of the schedules in the prior case I prepared in my own hand. And, as to the Astoria Light, Heat & Power Company, schedules which had been prepared by me or under my supervision were offered in evidence by the defendants. Those schedules were taken by the defendants from the Astoria Light, Heat & Power Company's books of account as of the time of the trial of that case. In connection with the present schedules which I have produced of the investment in Fixed Capital of the Astoria Light, Heat & Power Company from January, 1899, to December, 1923, inclusive, I made the routine by which the work was to be done and indicated the form of schedule desired and, after the tabulation had been [fol. 1564] prepared in manuscript, I checked them over with the books of account and confirmed their accuracy. I checked them against the books that had already been offered in evidence in this trial. These statements are accurate, both in summary and in detail.

Referring to the first page of this schedule, Exhibit No. 829 for identification, in the second column headed "Additions" I have shown the period of time to which the figures in the preliminary columns relate in respect of the gross investment of the company in its fixed capital during the respective years. I have listed in the left hand column the various years from the organization of the company down to 1923; in the second column the gross additions; in the third column are the book values or actual costs of the property yearly withdrawn from service during the respective years. Then, in the next column I have listed the net additions, being the gross additions less the withdrawal, and in the last column I have brought down the balances of the fixed capital as shown by the company's books at the end of each of the years, so that the last column is the net

investment shown cumulatively, year by year, with the exception that I made the same split in summary with respect to June 1, 1922, and June 1, 1923, which I made on the Fixed Capital Accounts of the Consolidated Gas Company. The balances which are shown in this first summary sheet set out in the following sheets as to original cost of fixed capital [fol. 1565] employed in the gas business are detailed as shown, for each of the periods. That is, I have prepared details for the periods ending June 1, 1923, December 31, 1923, June 1, 1922, and December 31, 1922.

On page 4 of the statement of the Fixed Capital of the Astoria Light, Heat & Power Company as of June 1, 1923, I have shown a deduction of two-thirds of the original cost of the Luyster Creek coal handling plant and storage facilities as devoted to the use of the New York Edison Company. The New York Edison Company wanted some additional storage space for coal and they entered into an arrangement, after some negotiations, with the Astoria Light, Heat & Power Company, under which this space was to be provided along what is known as Luyster Creek Dock and coal handling plant. That portion of the plant adjacent to this dock, where the coal handling equipment is erected, was assigned for the storage space of coal owned by the Edison Company and by the Astoria Light, Heat & Power Company. By "plant," I mean land available for storage space. We call it the coal handling plant. This division of the costs taken is shown by the books. Two-thirds of the space, the land adjacent to and around this Luyster Creek coal handling plant is assigned to the Edison Company and one-third to the Astoria Light, Heat & Power Company. I know that myself. That is shown in my records, and we have a map that tells the story, and that was a matter reported upon by the engineers, to the re- [fol. 1566] spective companies. It was a matter of agreement by the respective companies. In the regular course of business, in pursuance of such agreement, we rendered the bills up to December 31, 1923. I have shown this deduction as of the beginning of the time when there was this use. I am unable to say whether those bills have been paid. Presumably they have. That will be shown by the books, as to whether or not they have been paid. That arrangement which was entered into as of June 1, 1923, is still continued,

and consequently it shows the same deductions applicable to the subsequent period of December 31, 1923, and June 1, 1923, except that the amount will be probably changed.

This statement of investment of fixed capital of the Astoria Light, Heat & Power Company employed in the gas business from January, 1899, to December, 1923, inclusive, is a true and correct statement from the books of account of the Astoria Light, Heat & Power Company.

(Schedule marked Plaintiff's Exhibit No. 829 for identification, was received in evidence and marked Plaintiff's Exhibit No. 829.)

Referring to Plaintiff's Exhibit No. 829 for identification, designated "Astoria Light, Heat & Power Company Working Capital, 1922 and 1923," I prepared this statement of working capital for the Astoria Light, Heat & Power Company. I have shown the average actual working capital employed for corporate purposes according to the company's books during the year 1923. As to cash accounts receivable, materials and supplies—those are actual facts as shown by the books of account already in evidence. I have shown a figure for the end of each month for the year [fol. 1567] 1923 and the average for the 12 months. And, as the second sheet, I have shown the same details with respect to the average actual working capital of the company for corporate purposes during the year 1922. On the third sheet, I have shown the working capital necessary in the gas busines of the Astoria Light, Heat & Power Company exclusive of accounts receivable from affiliated gas companies during the year 1923. That is, from the actual accounts receivable, gas, I have eliminated as not urged as applicable to working capital for the gas business for the purposes of this case, the amounts due from affiliated gas companies. The materials and supplies, is the actual item from the books. The sum necessary for average cash, that is, from my judgment and experience, is $500,000. That is my judgment of what the Astoria Light, Heat & Power Company ought to have as a cash balance at all times, as a minimum. I have shown those items month by month for the year and on the average for 1922 and 1923. I have made an estimate of the required working capital of the Astoria Light, Heat & Power Company for the year 1923

for $3,280,000 and for 1922 to be $2,680,000. I eliminated from the actual accounts receivable of the Astoria Light, Heat & Power Company the amounts representing accounts receivable from system gas companies. The other accounts receivable of the Astoria Light, Heat & Power Company other than bills for gas consist of charges against concerns to whom the Astoria Light, Heat & Power Company sells [fol. 1568] coke, cayanogen sludge, coal tar, water gas tar and other residuals; ammonium sulphate, oxide and all other residuals and coke. This is charged to sundry debtors for residuals of various sorts. The accounts receivable which I have shown on this statement of working capital are the actual, eliminating the amounts from the affiliated gas companies. They tie up to the books of account already in evidence.

By the Master:

In this Exhibit No. 830 for identification, I have given two statements in regard to working capital, one showing the actual amount of cash—actual average cash on hand during each of the months during 1922 and 1923, and the accounts receivable for supplies, and so on. The first two pages are the actual facts as shown by the books of account during the two years. The items under the head of "Accounts Receivable" on the first two pages, include accounts receivable from the affiliated gas companies. That is eliminated in the statement on pages 3 and 4. And, on pages 3 and 4 I have substituted for the average amount of cash on hand for each of the months of 1922 and 1923 what in my judgment was the amount they should have had on hand.

(Plaintiff's Exhibit No. 830 for identification received in evidence and marked Plaintiff's Exhibit No. 830.)

By Mr. Ransom:

I can state in what respect the amount shown on schedule, Plaintiff's Exhibit No. 829, for fixed capital of the Astoria Light, Heat & Power Company as of June 30, 1922, differs from the amount of investment found by the Commission [fol. 1569] as of that date. In the findings of the Commission as of June 30, 1922, they added to our fixed capital as shown by this schedule just received in evidence an item

representing working capital of $3,226,703.21. The Commission added to the fixed capital, as I have shown in this schedule of working capital, in the amount I have just given, $3,226,703.21. Then the Commision also made a deduction representing the investment of the Astoria Light, Heat & Power Company for the benefit of its own consumers, some $15,100 or $15,110.42, so that the figure shown in Exhibit No. 829 as of June 30, 1922, would be reconciled with the sum found by the Commission as to the Astoria Light, Heat & Power Company, if I deducted this sum of $15,110.42 and added the sum of $3,226,703.21, representing working capital. It will prove to a penny. I have shown, in Exhibit No. 830, my own estimate of the working capital, which was $3,280,000 for the year 1923.

In the various schedules to which I have testified, I have used or may have used the terms "Cost," "original cost," "investment," "original investment" and "book value." I used all those terms synonymously. They all refer to the actual cost of the property as shown by the books. The books show the costs, and they are costs in our case. I have had charge of the Astoria Light, Heat & Power Company's books throughout its entire period of construction. I built them.

[fol. 1570] This statement, which is Exhibit No. 831 for identification, and is designated Consolidated Gas Company of New York, summary of the property used by the Consolidated Gas Company of New York in its gas business including the property owned and the portion used by the Company and owned by the affiliated gas companies as of June 1, 1923, December 31, 1923 and December 31, 1922, was prepared under my direction and checked by me against the sources referred to in the schedule. This is a further summary schedule which brings together the matters shown by the previous schedules in the manner here shown. For example, as to the item "Portion of property owned by the Consolidated Gas Company of New York and devoted to its own gas business," that is taken from the summary schedule, Exhibit No. 828, and the item, "Property owned by the Astoria Light, Heat & Power Company," the figures are taken from Exhibit No. 829. Exhibit No. 830 is working capital. From the total property owned by the Astoria Company and used in its gas business, as shown by Sched-

ules 829 and 830, I computed the portion of that investment used in the service of the Consolidated Gas Company's consumers, by the application of a percentage derived from the Joint Facilities Reports for the year 1923. I believe that is Exhibit 766. The property owned by the East River Company and devoted to the Consolidated consumers was taken from Exhibit 766, and as to the Standard Gas Light Company's mains, that was taken from the same exhibit. And with the percentage derived from the sale source applied, I have applied the same percentage to determine how much was applicable to the Consolidated's business, and likewise as to the 63rd Street governor and boiler house [fol. 1971] owned by the Standard Company and used by the Consolidated—same procedure. Now, these schedules which are comprised within Exhibit 831 for identification are made up in the same manner for the respective dates and from the same source, except that in 1922 the exhibit is 765 instead of 766. These figures are exclusive of the investment in the 15th Street holder property of the New Amsterdam Gas Company, and exclusive of the meter appliance repair shop property at 408 East 111th Street and the 124th Street fitting shop property of the Standard Gas Light Company. Those properties are handled in a manner which has been shown in connection with Mr. Teele's testimony, so that this summary schedule as it stands correlates with the Teele exhibit. This is a true and correct summary made up from the sources and in the manner which I have testified.

(Plaintiff's Exhibit No. 831 for identification was received in evidence, and marked Plaintiff's Exhibit No. 831.)

As of June 1, 1923, we had 548,151 active meters on the district; as of April 30, 1923, 551,319, and as of December 31, 1923, 560,189.

The outstanding capitalization of the Consolidated Company, as of June 1, 1923, was $158,943,600. The outstanding capitalization of the Consolidated Company as of December 31, 1923, was $191,964,825.96. Outstanding debts the Consolidated Gas Company had as of June 1, 1923, were $9,901,027.35, as of April 30, 1923, $10,280,016.44 and as of December 31, 1923, $12,025,452.87. The Consolidated Gas Company had other invested resources as of those dates,

in the amounts as follows: as of April 30, 1923, $70,584,090.73, as of June 1, 1923, $71,118,597.05, and as of December 31, 1923, $73,031,053.02.

New York, May 5, 1924.

[fol. 1572] Met pursuant to adjournment.

HENRY M. BRUNDAGE, a witness in behalf of the plaintiff, resumed the stand.

Cross-examination by Mr. Donnelly:

The biggest individual items of expense of the Consolidated Gas Company or of the Astoria Light, Heat & Power Company, in the cost of manufacture and production are pay roll, gas oil and coal.

I am able to state under oath the amount of working capital necessary for the business of the Consolidated Gas Company because this working capital should always provide us sufficient funds to take care of our peak. These amounts, that we have to provide to meet the weekly payrolls and the monthly payrolls, include a peak. In making up our estimate of cash requirements I considered several factors. I considered the amount we had to have to pay our monthly bills—when I say "bills" I mean all our creditors, including our paymaster's account; I considered the amount of cash we had to have to avail ourselves of discounts; I considered the average operating expenses, and it seemed to me that a company of our size, in order to maintain its credit, could not put themselves in a position of having less than two million dollars in cash.

By the Master:

In making up the schedule of working capital for the Astoria Company I gave both the average monthly cash and our estimate of the amount that should be on hand. I think one of the first schedules was the actual cash we had during a given period, as I recall it. I did not in my schedules give the average monthly working cash of the Consolidated. I can have such a statement made up in

connection with those working capital schedules; in other [fol. 1573] words, have a Consolidated Exhibit 826, completed in the same manner that Exhibit 830 for the Astoria was completed.

By Mr. Donnelly:

Speaking of the payroll, the peak in the Production Department, of course, occurs in the winter months, November, December, January, February and March when the production is at its highest. The peak in the Street Department will occur in the summer months. I have here the book form report here, containing the monthly reports.

Referring to the payroll, then, both for 1922 and 1923 for gas production, during the twelve month period of either one of those two years there is a variation in such payroll from month to month; there would be a difference. The payrolls will be at their highest during the winter months and at their lowest during the summer months. I cannot say without making a detailed study, which I have not done, what is the range of the variations. I would not even attempt to approximate it. As to whether it runs $100,000 or $10,000 I certainly would not attempt it. In respect, as I have already testified, of the Street Department, their payroll is at the lowest in the winter time and at the highest in the summer time. We can tell from the books already in evidence, how much our payroll is for any year. It is a matter of immediate record and the books are already in evidence. You will find in the Sundry Creditors Ledger an account under the title of "Paymaster," and to that account is credited every payroll of the company, and to that account are debited the payments as they are made through [fol. 1574] the treasurer's office. I have no independent recollection of what the payroll amounts to in money during the low months. I would not attempt to give it even approximately. Taking the payroll for the year 1923 as reported by the company to the Public Service Commission, at $5,116,105.49, that will give the average required monthly, for that item Payroll, by dividing the amount given by twelve. But it would not tell the story as to what would be required for each individual month. The tabulation in the exhibit for working capital of the Consolidated Gas

Company, and Astoria as I prepared it, dealt with an average working capital in respect of Accounts Receivable and Material and Supplies. In the case of Cash I gave the same figure every month. It is a fact, that in preparing Exhibits 826 and 827, I prepared a statement showing the average working capital actually employed and in Exhibits 826 and 827, I left it to be inferred, that there will be required the same amount of cash each and every month. I set up a requirement of $2,000,000, that is inclusive of all cash requirements, and irrespective of whether the payroll is big or small. It is likewise a fact that in making up Exhibits 826 and 827, I took the actual amounts for each month, totaled those and then divided by 12 to get the average.

We use oil month after month, depending upon the amount of gas made. I have not immediately before me the figure of our requirements for gas oil in the year 1923. The books are in evidence and show the amount for gas oil in the year 1923, the figure is from books that are in evidence.

[fol. 1575] By the Master:

I have, in the form of a tabulation for the year 1923 and the year 1922 for both companies, what I found from the books to be the cash each month for 1922 and 1923 of the Consolidated Gas Company. I have for the Consolidated the average actual working capital employed for corporate purposes exclusive of the gas delivered but not billed covering the years 1923 and 1922. It is in the same form as the subsequent sheets except that the cash is on the actual average monthly balance. There is also a change, in that in making up the tabulation that we are now offering I gave the accounts receivable in their entirety; but for the purpose of the study of our actual working capital that we required, I eliminated the amounts of accounts receivable from affiliated companies.

Tabulation referred to reads as follows:

Consolidated Gas Company of New York

Average Actual Working Capital Employed for Corporate Purposes Exclusive of Gas Delivered but not Billed During the Year 1922.

1922, Cash

January 31	$685,082 98
February 28	1,788,317 26
March 31	2,894,172 25
April 30	3,800,310 06
May 31	1,713,267 94
June 30	2,119,038 71
July 31	1,802,753 87
August 31	2,693,835 52
September 30	1,159,473 44
October 31	844,906 64
November 30	973,068 37
December 31	8,915,486 83
Total	$29,389,713 87
Average	$2,449,142 82

Average Actual Working Capital Employed for Corporate Purposes Exclusive of Gas Delivered but not Billed During the Year 1923.

	1923, Cash
January 31	$1,651,315 82
February 28	3,429,848 03
March 31	3,151,570 62
April 30	3,313,271 38
May 31	3,430,380 56
June 30	2,503,901 94
July 31	2,098,592 80
August 31	1,630,612 08
September 30	1,395,212 85
October 31	2,170,767 51
November 30	1,680,750 34
December 31	2,080,986 82
Total	$28,537,210 75
Average	$2,378,100 90

By Mr. Donnelly:

The figures in Plaintiff's Exhibits No. 826 and 827 for accounts receivable, gas, exclusive of amounts due from affiliated gas companies, are actual figures taken from the books. Assuming that the requirements for gas oil in the year 1923 were correctly stated at about $2,000,000 that would make an average amount in a month of about $170,000. As to the item of fuel for production purposes, assuming that amounted also in 1923 approximately to $2,000,000, I cannot say that was used in a fairly uniform quantity month after month, because it is not true. You use more fuel when your production is high and less when it is low. It is all a matter of record in the books, in [fol. 1577] evidence. That $2,000,000 would average about $170,000 a month. Take the amount charged paid to the Astoria Light, Heat & Power Company, and other companies for gas which we purchased from them in the year, $7,110,000 plus $2,507,000 for the use of manufacturing

plant, that equals about $9,600,000 for the two items on or about $800,000 per month as an average. Now, for the year, the totals in round figures are as follows:

For payroll	$5,110,000
For gas purchased	9,617,000
For gas oil	2,000,000
For production coal	2,120,000
Adding taxes	1,824,000

The total of these figures, including taxes, would no doubt be approximately $21,000,000, but I have not made that computation. The total gas operating expenses shown on your books in 1923, as tabulated by Mr. Teele, were $24,725,000, and deducting that $21,000,000, if it is correctly done mathematically, would leave about $3,725,000 for items other than those specified, with exception of taxes which are paid at irregular times. The other items represent $3,725,000 and that is something slightly over $300,000 a month by getting the average. All those figures would fluctuate from month to month. Taking the operating expenses and divide by 12, gives an average of about $2,000,000 a month. In my schedule for 1923, Exhibit 826, is an average of $1,650,763.25 for materials and supplies, which includes all of the materials and supplies carried by the company, gas making material, gas appliances in stock, residuals on hand, pipe and specials, gas oil, coal and those other things mentioned; all of the materials and supplies used in the gas business. There is included in the materials and supplies figure the stock account that we know as pipe and [fol. 1578] specials, to which is charged the pipe and specials purchased for main laying or repairing. Those include any material that we bought and put in stock might in part be used for the construction or repair work of the other two Manhattan companies—the New Standard and the New Amsterdam. Some of our stock might be used for the other companies, and for the Standard and the New Amsterdam only. If the Consolidated Telegraph & Electric Subway Company used it, it would be to such an inappreciable extent, you cannot measure it. We charge for all the work we do for them, but we can not carry any large amount of

stock, to be used by the subway company. By "inappreciable amount," I mean, the work we do for the subway company is minor repair work from time to time where they moved our mains; work on our own mains occasioned by the work that the subway company is doing in the streets and there would be no considerable amount carried for that purpose. The stock used for that purpose is taken out of Consolidated Gas Company stock. In the field, they relocate a main and it does not need any stock to do it except possibly an elbow and a T here and there. That is work of relocating our mains.

The Consolidated Gas Company's Street Department does all of the repair work for the Standard and the New Amsterdam, and therefore, some of our stock might be used for the two other Manhattan gas companies. I have no figures for 1922 and 1923 mentioned, to show what it amounted to. That figure is not contained anywhere in the books in evidence. We know how much we bill the companies for the work performed during the year. What we bill the [fol. 1579] other companies includes the material actually used, and whatever work we may have been doing for the other companies, is all charged to them. I did not make any deduction from our materials and supplies on account of that work done for those other companies. I recall as having incorporated the sheets shown me by counsel for the defendant Attorney General as part of my testimony; I think that was shown summarizing the expenditures billed to the affiliated companies exclusive of the joint facilities. All of the expenses credited by the items shown on this sheet are first paid by the Consolidated Gas Company and later billed to the subsidiary companies. Bills go out as fast as we get the charge tickets in from the Street Department and other sources and the bills are rendered at once. The charges for maintenance of the Department of Mains and Services, for maintenance of the Promotion Department and for maintenance of the Department of Claims and Arrears; for the Chemical Department; for pressure gauges and operating the 63rd Street gas storage station, all once a month. I would not say that that applies to all of the items shown on that sheet. It would not apply to this last group of accounts, the big item being the labor and

material charge by the Department of Mains and Services. All that repair work, as the charge tickets come in, are billed. The apportionments to which you referred in that upper group are billed monthly. The items on this sheet headed "Consolidated Gas Company of New York, charges made to affiliated gas companies for reimbursement of expenditures regularly incurred by the Consolidated Gas Company for the benefit of affiliated gas companies, exclusive of certain charges for jointly used facilities during the [fol. 1580] year 1923," and it begins with the item, "Engineering and Superintendence" and winds up with the item, "Gas Appliance Transferred," were incorporated in my testimony. They are for those that are billed monthly, sent out at the last day of the month and not billed in advance. After rendering of the bills the payments come in, within the next 15 or 20 days.

Referring to Exhibits 826 and 827, I have made no deductions for cash payments or other items on those two exhibits for those payments for the reason I have not included those accounts receivable in my schedule. I distinctly and emphatically took them out intentionally, and the heading so shows.

Going to the item of purchases from the Astoria, Light Heat & Power Company, which represents an average of $800,000 a month for the year 1923, as shown by Mr. Teele's 1923 schedules, these are billed to us by the Astoria Light Heat & Power Company as of the last day of the month but it is usually about the 7th or 8th of the month before we get that bill, but the bill bears the date as of the last of the month. We try to pay our bills between the 15th and 20th of every month.

Consumers meters are read every working day in the year. I mean by that that meter reading is going on on every working day. Our average index date is about the 14th of the month to the 14th of the succeeding month. A consumer whose meter was read on the 14th would result in having a bill issued about the 20th or 21st of December. The time of the company getting its money would depend upon the consumer. The company tries to collect their consumers' bills within 30 days—that is the effort. The [fol. 1581] time that elapses between the rendering of the

bill to the consumer and the receipt of the money by the gas company, I assume would be something more than 10 days from the time they got their bill—on the average, I believe, and some of the bills are paid by check as well as by cash and a great many consumers pay by check, regardless of the size of their bills. The average amount outstanding for gas, from consumers, and gas appliances, according to Plaintiff's Exhibit No. 826, is $2,187,409.74. The average monthly sales of gas during 1923 is a matter of record in the books already in evidence. It is about $25,000,000 for the year. I believe, according to the report of the P. S. C. for 1923 it was $25,968,078.77 or an average of about $2,187,409.74 as shown by Plaintiff's Exhibit 876. You cannot tie up by any rule of law or reason the amount of your gas sales against all the accounts receivable of the company, which include your sundry debtors, your appliance sales, your instalment sales and a number of other features of that nature. Our account is headed "Accounts Receivable, Gas, Exclusive of Amounts Due from Affiliated Companies," and that is exactly what it represents; but there are in there sundry debtors charges, as your assistants must know, and instalment sales and appliance sales; all that sort of thing is all in there and you cannot tie that up against your gas sales and get any kind of a result. The amount due from consumers for gas would be smaller than the amount that we have shown on Plaintiff's Exhibit No. 876. I have not made any computation, and the average outstandings for gas, from consumers, would be considerably less than those figures that I have shown there. [fol. 1582] "Speaking of gas billed December 14th, that gas was made, was it not, in the second half of November, and about half in December, 1923, so that when consumers bills are rendered they cover gas for a half period in November and for half of the gas which was produced in the month of December?" I do not understand the question: I would not attempt to answer that question. There must be a great number of our consumers who are billed about December 14th. Taking the cases of those consumers who are billed for their gas, say, the 15th of the month, in so far as that gas is concerned it might or might not be made at least half a month prior to the time that the bill was

rendered. I cannot identify gas on the day that it is made. It is the day it is indexed.

By the Master:

We bill promptly upon the meter being indexed. We try to run it on a 30 day basis, except as to some accounts which are indexed more often. As to gas billed in the middle of the month, a portion of it would have been delivered during the latter half of the previous month, that may be assumed in a very broad way.

By Mr. Donnelly:

A consumer whose bill was rendered on the 21st, indexed we will say on the 16th, would have the consumption on it from approximately the 16th of the previous month to the 16th of this month. I cannot say as to the mathematics, whether five-eighths of the gas that the Consolidated Company delivers to its consumers is being bought by the Consolidated Company from the Astoria Company. It is a matter of public record and shown in our P. S. C. reports, just how much we bought each year from the various companies. It is also shown in Mr. Teele's statement; the amount of gas bought, in feet and dollars. We collect [fol. 1583] the Astoria bills the end of the month and the general rule is to pay that bill between the 15th and the 20th; but I would certainly not testify that that particular gas went through the system and was billed to a consumer and the cash collected about the 20th. I cannot identify the Astoria gas that is bought from Astoria, as to when it is billed to the consumers, nor the hour and day it is paid for.

The gas oil of the company is bought under contract. We are obligated to pay our bill for deliveries during any month on or before the 15th of the succeeding month. All oil delivered during the month of April, for example, must be paid for on or before the 15th of May. If oil were delivered on the first day of April, we would have until the 15th of May to pay for it. On the other hand, oil delivered on the 30th of April we would have to pay for on the 15th of May, just the same. The period which elapses between

the time of delivery of the oil and the time of payment for the delivery of oil might be as low as 15 and as high as 45 days. It has that range, 15 to 45 days. Those are the terms of the contract. The deliveries come spasmodically as required. I might say in a broad way there is a delivery being made every day somewhere, at one or more of our plants. Every day might be—a little more often—they might come, but they are coming right along regularly. There is no rule about it.

Coal bills are paid on or before the 20th of each month instead of the 15th. Oil bills on the 15th, coal bills on the 20th. With reference to payment for coal, it may be as low as 20 days and it may be as high as 50.

[fol. 1584] On Plaintiff's Exhibit No. 826 we have an item, Gas, delivered but not billed averaging in 1923, $1,385,084.79. This figure that we used in making our computation represents two-thirds of a month's operating expenses, for the reason that under the average index date, taking it up to the 14th of the month, it means you do not get that billing into your accounts receivable and then in addition to that it takes five or six days to get the bill out, so that about 20 or 21 days of a month we have nothing set up on our books for accounts receivable; but meanwhile we have paid our cash for material and supplies to produce the gas that has been delivered—gas flowing out into the consumer's premises and being used, not yet set up on our books as an account receivable, and therefore this item should be included in the working capital as an investment made by the company for which they have as yet no corresponding asset. We do not carry on our books anywhere an item for gas stored and not delivered. That is just kept as a matter of statistical record. The average index date is a computation, by which we determine the average index period. You list on the left hand side of your sheet 31 days, and you list in your next column the amount of gas indexed on each one of those dates. You multiply each one, the first day, second day, third day, etc., by the amount indexed that day, and you get a result of multiplications by the number indexed on each day and you get an average index day. It is the correct way of averaging it up. That is the regular standard practice in the gas industry.

[fol. 1585] For materials, other than coal and oil, it comes in the category of all our miscellaneous supplies, and, as I have already testified, it is the company's practice to pay all those bills between the 15th and the 20th of every month. It would include pipe and specials unless provided otherwise by contract. During the year 1922 the average outstanding balance due our creditors was $2,295,943.81, and for the year 1923 the average outstanding balance due our creditors was $2,045,497.22. That is not all for materials and supplies. There would be a small balance included in those figures representing the payroll of the last week in the month, which might be carried over and not paid until the first day or two of the succeeding month. Otherwise, that balance would be all materials and supplies.

Referring to Plaintiff's Exhibit 826, taking the items in the Total column, the average for the Consolidated Gas Company in 1923 of $5,838,172.99 is the amount exclusive of the gas delivered but not billed, which includes cash, accounts receivable and materials and supplies. Those three items comprising the total were the amounts shown on our balance sheet at the end of each of the months, an average taken for the year. We undoubtedly had sundry creditors during each of the months of these years.

On the second sheet of Plaintiff's Exhibit No. 830, headed "Accounts Receivable," which is the Astoria Company's working capital 1922-1923, is shown the accounts receivable of the Astoria Company as shown by its books of account at the end of each of the months during 1922 and 1923, and [fol. 1586] an average statement. The second sheet would include the accounts receivable due the Astoria Company from any companies to which they delivered gas, of which the Consolidated would be one. There is a substantial sum included in there, but I cannot tell you how much. I haven't my work sheets here. I had work sheets in preparing these schedules, working capital schedules. The books of account offered in evidence of the Astoria Company are here in the court room and from that the answer can be made if counsel wants it for any month. It is a matter of immediate reference. It is shown in the Joint Facilities Report for 1922, but the next sheet, the third sheet, shows those accounts receivable with the sums due from the

affiliated companies eliminated, on the next page. I made no deduction on the Consolidated Gas Company's working capital of the amount which the Consolidated Gas Company owed on gas purchased from the Astoria Gas Company. On the first and second sheets I set forth the record as shown by the books of account, but in making up our requirements on the third and fourth sheets I carefully eliminated all the accounts receivable due the Astoria Company from the affiliated companies including the Consolidated. I am setting forth the details of my estimate of working capital for the Astoria Company on the basis of the third and fourth sheets of Exhibit 830, and for the Consolidated Company on Exhibits 826 and 827.

Speaking of the Astoria Company and of the item of materials and supplies, the terms under which they were purchased are the same as those on which the Consolidated Gas Company purchases its supplies. Oil payments on the [fol. 1587] 15th; coal on the 20th; and of course, both companies, are subject to the question of the cash discounts which apply all through, all small supplies. If we can get a cash discount, we pay the bill immediately, but the terms, in so far as coal and oil are concerned, are the same as those which obtain in the Consolidated Gas Company. I do not believe I have such a record here of the amount owed by the Astoria on account of those materials. I gave it on the Consolidated; I had the Consolidated prepared. I have no separate tabulation of the Astoria indebtedness during these two years, but there was such money owing; they have accounts payable, the same as every other company has, and the books here in court show that amount. I cannot say what amount was included in the materials and supplies for construction material on Astoria. If there was any material bought for construction, it would be charged to materials and supplies and credited to the sundry creditors and stand out there until it was paid.

Referring to the Consolidated schedules, the item of cash shown on my estimate of working capital as of December 31, 1922, is $8,915,486.83 and that is by far the largest amount shown there for the year 1922. The amount for November 30, 1922 being $973,068.37 and for the month of October $844,906.64. Referring to Sheet 2, in respect of which I have already testified we are not claiming any such amounts.

During the month of December 1922, we issued additional capital stock and the cash came in in a very substantial figure during that month and was in our balance at the end of [fol. 1588] the month. On the 2nd day of January, the succeeding month, the greater portion of it disappeared in payment of debts. I cannot say that I took the actual cash as a guide in setting up my figure of $2,000,000 as shown on Exhibit 826. I got my $2,000,000 from the standpoint of our operating expenses, about what we would need; from the standpoint of our average balances due our sundry creditors that we would need to pay our debts; the necessity of maintaining the company's credit; the necessity of always having cash on hand to discount our bills. All those factors were considered and I came to the conclusion that about $2,000,000 would be the minimum that we ought to have. If you take the average of the year, but eliminate the month of December, and take the other months and make an average for 11 months, you will find that we had an actual cash balance of $1,850,000. The total amount of cash disbursed by our company during the month of January, 1923, is a matter of record in the cash book here in evidence. The aggregate amount of the cash disbursements of the company during the month of January, 1923, was the sum of $24,253,715.52. For eleven months the cash would be something less that $20,400,000.

Take the month of January 1922, the balance shown here as of January 1, 1922, represents the cash balances in the treasury as of January 1st. The receipts and disbursements for the month of January, 1922, as shown by the books of account represent all the receipts and disbursements, whether for gas operations or for finance—whatever the company did. I cannot tell you how much of that, speaking of January, 1922, applied to finance, as distinguished from operations, because it would be a hard, long [fol. 1589] task to accomplish. There would have to be an analysis of the books in evidence for the purpose of answering that question. Accountants can take our cash book for the month of January, 1922, and determine the source of all the revenues and the nature of all disbursements.

Referring to the cash book for January, 1922, in evidence, as Plaintiff's Exhibit No. 716, on page 16 of said exhibit, the

two items of United Electric Light & Power Company $500,000 and immediately following that, the New York Edison Company, $1,000,000, represent disbursements made to those two companies under date of the 18th Day of January for the amounts stated. I do not believe either of those items refer to gas operations, but the evidence would be the voucher itself on which the payment was made. On page 21 of this same exhibit is an item to the New York Edison Company for $1,000,000 and on page 26, Northern Union Gas Company, $250,000, and the New Amsterdam Gas Company, $647,881.12. The vouchers can be produced and they tell specifically what each payment represents. I would not care to say, from looking at the cash book itself, as to whether any of those three items covered gas operations. In every case, following months in 1922, no disbursement can be made without the voucher so that without the voucher itself, I could not tell just exactly what the disbursement was for. The entry in the cash book would not be sufficient to identify the item.

On April 30, 1922, our cash balance appears to be $3,800,-610.06. I would not say that that was sufficient to cover us for about two months of gas operating expenses. That happens to be our total cash for all purposes at April 30th. It was our total corporate cash for every purpose of the company, which might include financing the other companies.

[fol. 1590] In making up my exhibits on working capital of the Astoria Light, Heat & Power Company, I made no deduction for working capital employed on account of the New York Edison Company for whom we did the handling of the coal at Luyster Creek. I did make a deduction from fixed capital. We finance the operations of the other company, to the extent that some of the apparatus might be used for unloading coal for the Edison Company; such apparatus is used for unloading the Edison Company coal and they are charged for it, as I have already testified. In making up the exhibits for the Consolidated Gas Company, the item of accounts receivable is computed on the $1.15 rate. It is the accounts receivable as they actually stand on our books as of the different dates, that is, as far as the gas sales are concerned. I eliminated from the accounts receivable all the moneys due us from the affiliated

companies. It is all out. I have given the actual materials and supplies on hand at the end of each month during these two years.

[fol. 1591] New York, May 6, 1924.

Met pursuant to adjournment.

GEORGE E. WOODS, called as a witness on behalf of the plaintiff, being duly sworn, testified as follows:

By Mr. Ransom:

I live at Astoria, Long Island City and am Chief Engineer of the Consolidated Gas Company, Astoria Light, Heat & Power Company, Chief Engineer of the Standard Gas Light Company, Consulting Engineer for all of the gas companies connected with the Consolidated Gas System, in the Borough of Manhattan, the Bronx and Queens, President of the Astoria Light, Heat & Power Company and President of the Central Union Gas Company. I have immediate charge of the manufacturing and holder stations of those companies and their construction and mechanical departments. In the City of New York, I first became associated with the Standard Gas Light Company of the City of New York in May, 1892, as an assistant in the manufacturing and distributing departments, and I have filled various positions with that company, the Consolidated Gas Company, and other gas companies in the City of New York. I am now fifty four years old. I first entered the gas business in 1883, after leaving high school, when I accepted a position with the Evansville Gas Company, at Evansville, Indiana, which operated a coal gas plant. I continued in that position for five years, and my duties embraced every department of the company's operation, including the drawing of plans for construction and equipment of plant, constructing and supervising construction of plant, laying of mains and services, and directing the operations of the plant. From Evansville, I went to the Detroit Gas Company at Detroit, Michigan as assistant superintendent of the manufacturing plant, and was there employed for a period of three years, having charge of both the con- [fol. 1592] struction and operation of the plant. The De-

troit gas plant was equipped with both coal and water gas apparatus. I then became secretary and manager of the Pulaski Gas Light Company, and the Little Rock Light & Power Company, having charge of the manufacture and distribution of gas, also keeping the general books of the company. In 1892, I accepted a position with the Standard Gas Light Company of the City of New York, as assistant engineer in charge of street work and also as assistant of the manufacturing plant. During my connection with the Standard Gas Light Company, from 1892 to 1901, there was laid, under my direction and supervision, about forty per cent of all the mains which the Standard Company has at the present time, the company now having more than 200 miles of street mains and pipe lines in service in the Boroughs of Manhattan and the Bronx. In 1896, I became chief engineer of the company, and had charge of its plant construction and operation, including the preparation of plans and specifications, securing of bids, selecting of materials, approval of vouchers and bills, and authorizations of payments to be made. In 1898, I was appointed general manager of the Standard Gas Light Company, and continued in that position until 1901. I had charge of all departments of the company, that is, manufacturing and distributing and commercial. Both as assistant engineer and as chief engineer, I had charge of the hiring of labor, and as general manager I had charge of all the commercial operations of the company. In March, 1901, I was appointed to the position of Engineer of Manufacture of the Consolidated Gas Company of New York, and also retain my position as Chief Engineer of the Standard Company. [fol. 1593] Subsequently, I also became assistant chief engineer of the Consolidated Gas Company and was acting chief engineer during various periods of absence of the Chief Engineer, Mr. William H. Bradley, who was the Chief Engineer of the Consolidated Gas Company from 1886 to 1922. I was also assistant chief engineer and engineer of manufacture of the Astoria Light, Heat & Power Company, and consulting engineer of the New York and Queens Gas Company. On January 25, 1922, I was appointed chief engineer of the Consolidated Gas Company, and at the same time I was appointed Chief Engineer of the Astoria Light, Heat & Power Company, and as such I have had under my

charge all of the engineering and mechanical departments of those companies. I was also elected to succeed the late Mr. William H. Bradley as president of the Astoria Light, Heat & Power Company and the Central Union Gas Company. Owing to the intimate relation between the manufacture and distribution of gas by the various companies of the Consolidated gas system, it has been my duty carefully to observe the operation of the manufacturing plants of those companies and to advise them as to all matters of gas manufacture, and as to such matters of gas distribution as are related to the manufacture and send-out of gas. I am a member of the American Gas Association, the Illuminating Engineering Society, the American Society of Mechanical Engineers, and the Society of Gas Engineering of the City of New York, and was President of the Society of Gas Engineering of New York City for fifteen years. I am licensed by the University of the State of New York to practice professional engineering. I have studied the theory and practice of gas making for the past forty years. [fol. 1594] I have from time to time visited and examined the principal gas plants of this country, and have visited and examined most of the larger plants in Europe, such as the plants in Manchester, Liverpool, Sheffield and London, Paris, Berlin, Munich, Cologne, Konigsburg, Vienna, Budapest, Brussels and other cities, and likewise some of the small plants where there were particular types of apparatus. I have from time to time been consulted by other gas companies and other gas engineers with reference to particular problems of operation or construction of gas systems. In the course of my experience, I have purchased the materials and have hired the labor used in the gas business, and have been and am familiar with market prices for such materials and labor and with the cost of operation and construction, during the entire period of my service in the gas business. By reason of my duties of Chief Engineer of the Consolidated Gas Company, I am familiar with current prices of materials and rates of pay of labor entering into the manufacture and distribution of gas and the construction of buildings and gas machinery and appliances, the laying of mains and services, and the installation of meters, as well as those entering into the maintenance, repair and replacement of such properties.

There are two processes being generally used in the process of manufacturing commercial or city gas. They are carburetted water gas and coal gas and are manufactured by different processes. There is no difference in the constituents of water and coal gas except in the proportionate amounts in the two kinds of gas, that is, the constituents [fol. 1595] are about the same, but the proportions vary.

Carburetted water gas as it — used in the plants of the Consolidated Gas Company and the affiliated gas companies of the general transfer system is the result of the decomposition of steam in the presence of an incandescent carbon, usually in the form of anthracite coal or coke. The two elements in the steam, which are hydrogen and oxygen, are liberated, the hydrogen being liberated as a free gas and the oxygen from the steam combining with the carbon in the fuel and producing carbon monoxide and carbon dioxide. The mixture of the hydrogen and the carbon monoxide and carbon dioxide is known as a straight blue water gas. This is enriched by means of an oil gas usually produced from the gasification of gas oil, which when mixed with the blue water gas produces what is commercially known as carburetted water gas. That is, what is called a straight blue water gas in water gas manufacture results from the decomposition of the steam and the combining of the oxygen with the carbon in the fuel, and to make a carburetted water gas the hydro-carbon is mixed with the blue gas.

Coal gas as it is made in the plants of the Consolidated Gas Company and system is the result of the destructive distillation of a bituminous gas coal. The coal is usually placed in an hermetically sealed vessel or retort which is externally heated. The heat applied changes the general character of the coal, liberates all of the volatile matter, leaving behind the carbonaceous material in the form of coke. The volatile matter liberated consists of gas, ammonia, tar, sulphur and cyanide. Aside from the gas, all other products are either known as by-products or impurities. When you have produced the gas which is the result of the application of external heat to coal in these hermeti- [fol. 1596] cally sealed retorts, in order to produce a higher candlepower or higher British thermal unit content, depends upon the heating value of the gas being delivered

on to the district. A high B. t. u. content would require either the admixture of an oil gas with the coal gas in order to produce the proper British thermal content, or if the straight oil gas was not used it would require the use of a higher British thermal value carburetted water gas. An oil gas as distinguished from a carburetted water gas would be not the decomposition but the gasification of a gas oil in an hermetically sealed retort similar to that from which coal gas was made, gasifying the gas oil, producing the gas which would be known as *as* straight oil gas. That has a very much higher thermal unit content as well as a very much higher candlepower content than either carburetted water gas, or blue water gas, or coal gas, as it comes from the retorts, but the proportions in which we mix either the straight oil gas or our carburetted water gas of high content are determined by the standard that we are producing.

Coal gas is manufactured from a bituminous coal of a certain quality and content called gas coal and usually what is known as a high volatile coal running anywhere from 32 to 38 per cent of volatile matter in the coal, and also a coal that will coke—that is the residuum. There are many coals, or some coals that are high in volatile matter but have not the coking qualifications. In other words, it would come out as a dust. So that the requirements of a good gas making coal are that it has high volatile content and the coking qualifications in the coal itself. Coal gas is made from a special quality of bituminous coal known as gas coal.

The kind of oil used under my supervision by the com- [fol. 1597] panies manufacturing gas on the Consolidated transfer, system is in the trade known as a gas oil, which is a distillation from petroleum crude oil, and the oils used by us have a gravity ranging from 28 to 34 degrees Baume. For water gas manufacture in the generators you would use the anthracite coal or coke. For steam purposes any bituminous steam coal, coke, anthracite, buckwheat—any kind of a fuel would do for steam. The anthracite coal or anthracite size for water gas is known as the broken size. It is a size of anthracite coal somewhat larger than the so-called stove coals, but for steam making purposes externally or for boiler fuel purposes, we use any type of boiler fuel, including bituminous steam coal, coke, buck-

wheat, or the smaller sizes of anthracite. Broken coal is infinitely the better size to get production and efficiency and an efficient use of the amount used. In the retorts in coal gas manufacture—coking coal is what we use as a bituminous coal. The residu-m, coke, from the coal itself, is drawn from the retorts and a part of that coke drawn into the furnaces and used for heating what we call the benches, so as far as heating the benches is concerned, we get our heat from the use of part of the coke that is left in the retorts. In the course of my service as Assistant Chief Engineer and later as Chief Engineer of the Consolidated Gas Company, and as Chief Engineer and Consulting Engineer of the affiliated gas companies, I visited the plants and stations of the Consolidated Gas Company and the other companies, especially the companies that are on the so-called transfer system, many hundreds of times. I am continuously engaged at that when I am not in court. I am familiar with the properties of the plaintiff and the condi- [fol. 1598] tion of those properties, as well as the properties of the other companies and their condition, both as Assistant Chief Engineer and as Chief Engineer. The various properties of the Consolidated Gas Company and of the Astoria Light, Heat & Power Company used in the manufacture and distribution of gas have been maintained and are maintained in a high state of operating efficiency; the repairs have been attended to, made from time to time when needed, and the operating efficiency of the plants at the present time is as good or better than when installed. Replacements have been made from time to time as and when needed, and is the testimony which I have given is applicable to the Astoria as well as the Consolidated, and to the properties of the other companies which make gas for the transfer system. I should say there has been an increase in capacity from the time of installation. By capable supervision and good operating condition and good maintenance of the plant, the operation will probably be improved over its operation at the time of installation, as a result of minor changes. That is the effect of proper operation and good maintenance as compared with the efficiency when new. It takes several years to round out a new plant before you get a good operating condition. That is, there are always some little things that require taking care of, and as the result of this operation you find means of

handling things in the operation of the plants which is an improvement over the time of commencing the operation. So that as a result of these things, there is an improvement in operating efficiency as well as capacity, over that which was or might have been attained when the plant was first erected or the apparatus was first installed. That is true [fol. 1599] with every one of our plants today. Gas is usually made fairly uniformly throughout the twenty four hours. The consumption of gas by the consumers is somewhat intermittent, being variable from hour to hour, so that the real function of the storage holder is to permit the operation of a plant fairly uniformly and at the same time supply the needs of the consumer at any and all times, the storage holder acting as a sort of balance, taking up the come and go of the requirements of the consumer. Where there is a situation where the plant serves the company's entire territory, all gas goes into a storage holder. There may be more than one storage holder, there may be one at the plant and there may be one or more in the outlying districts. All gas is sent into either the storage holder at the plant or through a transfer main into the storage holders on the district and from there distributed to the consumers to meet whatever requirements they may have. Generally speaking, it is the weight of the holder that gives the pressure on the distributing system. That is generally true, that the weight of the holder is under ordinary conditions ample to give the required pressure for the proper use of gas on the district. The pressure is equalized by means of governors, etc. Of course the pressure on the district varies depending upon the demand. The holder gives the initial pressure, which, however, is maintained or regulated by means of a governor at the distributing holder station. It is practicable in the manufacture of gas to maintain by means of the holders a relationship between production and the consumers' demand over the 24 hours. The storage holders are for the purpose of assuring a constant supply of gas to the consumers for a period [fol. 1600] of 24 hours. The storage capacity is not sufficient to permit the closing down of the plants and allow the storage holders to deliver gas. You cannot manufacture it in anticipation and store it the way you can with many commercial products. For instance, our holder capacity on the system and in the Consolidated itself is

about 70 per cent of its maximum daily capacity. In the plants of the Consolidated Gas Company and the Astoria Company and affiliated gas companies coal gas and water gas are manufactured; that is, not the affiliated companies, but as far as the Consolidated is concerned, prior to the withdrawal of the 14th and 42nd Street properties, the Consolidated made both coal and water gas; the Central Union makes both coal and water gas, and the Astoria Company makes both coal and water gas. The balance of the plants in the company's system all produce plain carburetted water gas. Since the withdrawal of the 14th and 42nd Street properties, the Consolidated Gas Company itself makes nothing but carburetted water gas. That is, at the present time the Consolidated Company has not constructed and in operation any plant which makes anything except water gas. The coal gas is primarily obtained from the Astoria Company. The Central Union Company is at the present time manufacturing coal gas. As to the other properties or other plants on the transfer system, aside from the Astoria and the Central Union, at the present time they are making only water gas. The relation between the annual output of coal gas and the annual output of water gas in the companies on the transfer system under my supervision in 1922 and 1923 has been about 85 per cent water gas and 15 per cent coal gas. That may vary from 84-16 to 86-14. It is about 85-15; that is the average. [fol. 1601] Those percentages of the total manufacture of gas by plants are located on and connected with the transfer system. Comparing the cost of coal gas manufacture with the cost of water gas manufacture there are no means of knowing what the cost of coal gas would be or what the cost of water gas would be, and no means of making a comparison between coal and water gas as of a time, unless we know the costs that are included in it, the costs of material entering into coal gas and those entering into water gas. There may be a time when coal gas can be produced for less money, and six months or a year hence the figures would be reversed the other way. There is no way of keeping the cost of these two gases upon a parity so far as their manufacture is concerned, and there is no direct relation between the costs entering into the manufacture of coal gas and the costs entering into the manufacture of water gas. The principal elements in one at one time may

result in a higher cost for that kind of gas than the other, and at another time result in a lower cost. The costs entering into the manufacture by each process fluctuate as the costs of the principal elements entering into it fluctuate and they may not fluctuate on a parity or in any definite relation. If the cost of bituminous coal was high and there had been no change in the prices of anthracite or gas oil, you might expect a lower water gas cost; likewise, if the price of bituminous coal were low and the price of anthracite and gas oil were high, that would effect the price of the coal gas. So that one or the other may be either higher or lower at a given time. Under our system as it is conducted and the availability of both methods of [fol. 1602] manufacture, I would say that that would tend to economy. To the extent that the capacities of the respective plants render such economies possible. In other words, if it were possible to make coal gas for less money than water gas, to the extent of our coal gas capacity, we could operate them and produce that cheaper gas; in like manner we would not be required to make as much coal gas if the water gas were a cheaper product. We do within the limits of our reasonable and actual operating conditions swing the emphasis to coal or to water gas according to which may at a particular time or during a particular period be made more cheaply. There are periods of time in the year that, which ever should cost the most during the winter months, we would be compelled to operate both the result of our capacity; that is, unless we had a reserve very much greater than we have at present, that process could not be applied to the peak of our winter demand. You have the flexibility, during the summer months. As between plants manufacturing gas by the same process on the transfer system, it has not been found practicable to equalize the cost of manufacture. Given two identical plants, separated from each other, the operating cost of a day or a week or a period of time might not be the same. There is the element of the personal equation that enters into it, the character of the materials. Efficiency of labor and efficiency of given materials are not always the same. Given the same plant, on three different shifts, we find we get variable results. Taking a long period of time we can approximate about what the cost might be, but we do not

find any two plants in our system that have the same cost per thousand over any period of time. That is, given dif-
[fol. 1603] ferent labor crews and different shifts, and the materials contemporaneously received at different plants, we get contemporaneously slightly or somewhat variable results, so far as operations with unit quantities of material are concerned. No way has ever been devised of equalizing or eliminating that differentiation based on the human factor; that I know of, I wish there were, so that we have to judge our costs by the averages. We are continually studying and making comparisons to secure an approximation of results at the different plants all the time. We do that all the time. That is one of my duties, both myself and my subordinates and we find somewhat similar differences even in the same plants, compared with different operating crews at different hours of the day and night, or different materials. Different days, different weeks, and the analyses are being made all the while, and comparisons made with the different companies, with the different plants, to determine, knowing what they are doing, why one plant may be doing a little different in so far as results are concerned and there are determinations made to why these same results cannot be obtained in some of the other plants so that we judge our operating results by averages in all plants rather than by figures for a short period of time in one plant and make an analysis of all the operating conditions of all the plants with an effort to try and always do the best in all the plants, that is we seek the best possible results in each plant, regardless of whether they correspond closely to what is being obtained at the same time in some other plant.

[fol. 1604] The Consolidated Gas Company had in use in its gas business as of June 1, 1923, 14th, 42nd, 11th Street, 99th Street and 21st Street gas plants. The 14th and 42nd Street plants were coal gas plants and the rest were and are water gas plants. 14th Street had five million cubic feet per day; 42nd Street four and half million cubic feet per day; 11th Street 24 million; 99th Street 5½ million and 21st Street 28½ million. That would make 67½ million cubic feet of which 9½ million cubic feet was coal gas plant capacity and 58 million cubic feet per day water gas plant capacity. Since June 1, 1923 the 21st Street plant has been

increased to a capacity of about 38 million cubic feet per day, and 14th Street and 42nd Street have been withdrawn from service; but we have now the same capacity that we had when 14th and 42nd Street were in service, but it is all water gas now and no coal gas. Since the fall of 1923, the 14th and 42nd Street plants have no longer been available for any purposes of the gas business. The capacity of the holders of the Consolidate- Gas Company as of June 1, 1923, I think was about 63 million. The 11th Street was 14 million; 15th Street 3 million; 21st Street 3 million; 63rd Street 5 million; 44th Street 3½ million; 65th Street 8 million; 99th Street 1,300,000; 111th Street 10 million; 132nd Street 5 million; and Kingsbridge 10 million. These figures relate to the commercial holders; not to the relief holders.

Water gas, as generally made, is an intermittent process and you have a blow whereby you bring the carbonaceous material to a proper temperature to decompose the steam, and after this temperature has been attained in the generator the blowing ceases and steam is admitted into the generator and gas is being made for a period of time. In other words, assuming one generator, you have, we will say, a three minute blow in which no gas is being made [fol. 1605] whatever, and then three or four minutes in which gas is being made. The relief holder acts as a balance in that it takes the gas which leaves the generator house, passing through condensers into the relief holder, and from there it is pumped by means of an exhauster through the rest of the apparatus. By that means you can get a constant flow of gas through the apparatus, so that while the run is on the relief holder rises; in other words, acts as a balance. As the blow is on, the relief holder goes down. Were it not for the relief holder, the size of the connections, the purifiers, the meters and everything would have to be very much larger, because they would be required to pass and purify the amount of gas as made in four minutes, whereas with the relief holder that same thing can be put through in seven minutes. In other words, it gives a uniform draw of gas through the apparatus irrespective of the intermittent operation of the generator itself. We do not have to use relief holders in connection with coal gas manufacture. Coal gas requires much larger

amount of property and investment per quantity of gas made—and likewise as to the amount of land occupied, as well as the amount of buildings, structures and apparatus and equipment. For example, in our Astoria plant, where we have two 10-million cubic foot units of coal gas, a total of 20 million, is occupying the same space as the two water gas units, which produce 66 million, in so far as the occupation of land is concerned. In addition to that, it requires a greater coal storage for coal gas than it does for water gas. You get about 11,000 cubic feet of gas from a ton of gas coal, whereas, you will get 65,000 feet out of a ton of [fol. 1606] anthracite coal. It requires a bigger storage for the gas coal. Continuity of gas service to consumers is an important factor in the conduct of the gas business under Metropolitan conditions.

By the Master:

In regard to the cost of installation of machinery and apparatus, the relation between coal gas and water gas plants is about two to one. Not less than that. Your investment in coal gas is infinitely higher than in water gas. Using a round figure, which may be low, I would say that it would cost us today $250 per thousand feet of daily capacity for water gas. It would cost us $500 per thousand feet of daily capacity on the coal gas. That relates to construction and is your investment.

By Mr. Ransom:

So that if you had a situation, for example, at a given time where the operating or manufacturing cost as to coal gas was less, apparently, than the cost of water gas, there would of necessity be taken into account the matter of return on the increased investment in coal gas. You have to balance those things; some coal gas whether it costs much or less—that is, the two kinds of gases in an outfit such as we have here are of very great importance. There has been at times the difficulty of getting anthracite coal when we could get soft coal, and the results of making coal gas with our residual coke which we could use for water gas was a great advantage, notwithstanding the fact that coal gas might have cost a little more money as of that time. There is not any question about it that there is an advantage in making

some coal gas irrespective of some disparity in cost, because of its fuel producing results for water gas manufacture. We have found it so on many occasions. There have been times when we were able to keep your aggregate supply of gas going only by making coal gas so as to produce coke for water gas manufacture. That is, we could not get from any other source enough anthracite coal to make our water gas. There is in my opinion, and experience, from a commercial point of view, under Metropolitan con- [fol. 1607] ditions an advantage to consumers and an advantage in the stability of the gas and efficiency of the service in having some coal gas mixed with the water gas. There isn't any doubt in my mind that for the interest of the consumer it is infinitely better when you have the two kinds of gas. With respect to the question of service as to the quality of gas, that is, a mixture of 585 coal and water gas, or plain straight water gas for 585 b. t. u. such as we are using now, I think it would be little or no difference as far as that is concerned. That has more relation to the commercial operation of the plant rather than to the quality of the gas produced. There was more of an advantage to the consumer in economy in the availability of the alternative methods of manufacture. That is what I refer to rather than in service; in the equality of the gas, I do not think there would be any difference in that, not at the present thermal content. Continuity of service is of the utmost importance to the consumer in that they want a continuous supply of gas. It is a necessity, and if it was not a continuous service, I do not know what would happen. Aside from that, a service that is not continuous, aside from affecting the health and comfort of the consumers, in the City of New York such an intermittency is extremely dangerous if the gas went off and on at various times. An interruption in the supply or flow of gas would be very dangerous. It would be especially and extremely dangerous under Metropolitan conditions, in my judgment; the necessity and the importance of having a continuous supply of gas to the City of New York is just about as important as having a contin-ous supply of water, aside from the fact that the dangers [fol. 1608] of an interrupted supply of gas would be infinitely greater than those of an interrupted supply of water. Under New York conditions a stoppage of supply and then

a resumption of the flow of gas would be attended by very great danger. I think that there would be a great loss of life under such conditions, not only a loss of life, but there would possibly be also a loss of property. For instance, if people were using the gas for cooking or heating and had gone to bed and had gone to sleep, allowing the gas to burn, and there were a stoppage of gas for a period of time, and the gas allowed to come back, return after an hour or two, you can imagine what catastrophe there would be under such conditions of service.

There have been many times, instances of fires, explosions or other accidents which affect the possibility of the use of particular plants or portions of a plant or equipment. There have been such instances in the past year within the City of New York as to gas companies operating here and as to other companies than the Consolidated own with the City of New York. Assuming that these people were using gas, that it was the winter time, and that they had a stove lighted and were sleeping and the gas was lighted and they were trying to keep the place warm and the gas suddenly ceased for the district on large parts of the district, that the gas went out, and in the course of several hours it was permitted to return; the gas had gone out; the service was returned; gas flowing through the pipes into the stove, into the rooms; you can understand that asphyxiation would take place and also understand that a striking of a match or anything in connection with the stove would cause an [fol. 1609] explosion. That relates to an interrpution of the service. Supposing we had to-morrow in the City of New York, or in any given city a stoppage of supply, so that the manufacture and distribution of gas ceased; we would do exactly what other companies have done in like circumstances, and that has been, where there has been an interruption of supply for a period of time, such as happened in Atlantic City and such as happened at Des Moines, Iowa and such as happened at Springfield, Massachuetts, where these were all the result of explosions in the generator house or parts of the plants, service was stopped and every house was visited, and every service was shut off in the entire city, and naturally it took some time to do that. There was no pressure on the lines. Air had gotten into the mains to a certain extent. Before service was given to the

consumer at all the mains themselves had to be purged, because there was a mixture of air and gas in the mains, and when it was found that the right quality of gas was in the mains, then they went around and opened each individual service and drew that out, for the purpose of seeing that everything was all right throughout the entire territory. Every individual gas-*burn*ing orifice had to be inspected and closed. We could not do anything else. What they would do, would be to turn the meter on and go up into the -partment, or whatever it may be, and they would light a burner to see the condition of it and stay there until such time as they saw that the air was out of the lines and that they were having a good supply of gas. They would have to watch the purging of each orifice. It would depend upon conditions they might go to the top of the house to see if they had purged the entire building, as to [fol. 1610] each service for the conditions on each individual premises would have to be dealt with. In a small way, to illustrate, we have those things to-day. For instance, something should happen to the service of a building whereby we would have to cut it off and put in a new service. The meters supplying the building were in the apartments themselves, and there might be fifteen or twenty or thirty meters on that particular line. The gas cannot be given to that building or is not given until such time as every apartment can be entered to see that the meter cock is shut off at the meter. If there were twenty eight people that you could get into their homes and two that you could not get into, the twenty eight people would have to be without gas until such time as we could get into the other two homes. Not knowing the conditions in there, as to whether anything was wrong, the company under those conditions will not turn on service until they can visit the apartment. It would not necessarily have to be an explosion to cause this. I simply say in a small way that is the care that must be taken in looking after interrupted service.

What I have just described as taking place in a single building, where we have turned off gas in the service which enters that building, would in the event of a cessation of supply be multiplied and duplicated by the number of buildings that there are in the City. These instances that I have

spoken of in Springfield and in Atlantic City and Des Moines, Iowa, for illustration, are cases where the entire city was supplied from a single plant. That danger of a cessation or stoppage of supply is lessened by having num- [fol. 1611] bers of plants in different locations, accompanied by a transfer system, with an interconnection of the plants. Regarding the danger of a stoppage of service through an explosion, fire or accident, where you have different plants feeding into the distribution system, it is decreased if you have sufficient reserve capacity. If you have a reserve and you have more than one plant—two—three, four plants, whatever there may be—and then these plants are all connected as to one general system, whereby if one went out the others continued to function, the danger attending an explosion of such kind as mentioned at one of the plants would be very much less than where you had one plant supplying the entire city. There have been instances in the City of New York where fire or explosion or conflagration has seriously affected part of a plant or a holder station without the interruption or stoppage of service. In our own company, at 11th Street, an accident to the fly wheel about a year ago shut the plant down for about twenty hours. At 115th Street, there were two accidents, one when a fly wheel accident shut them down for about twenty four hours, and another at that same plant in an explosion in the purifying boxes. There was an oil fire at one of the Brooklyn Union plants about three years ago. Referring now to the conditions of ordinary operation leaving aside any question of accident or fire or explosion, it is not feasible to operate any gas plant continously to maximum capacity for 365 days in the year because your repairs and the up-keep and maintenance of the plant must be done and that is usually taken care of during the period of slack demand. Some portions of the plant are under the [fol. 1612] necessity of being shut down periodically or intermittently. Some portions need rechecking and such things as that, and that is being done pretty steadily. You have a certain number of generating units all of which are never in operation at the one time; there may be one, two, three or four down, depending on the size of the plant. Under ordinary conditions the operating capacity of the

plant could be well maintained, outside of some general repairs that may be necessary. What you call major repairs and major replacements we would make during off peak periods of the year. The shutting down of particular generators necessitated periodically for the relining and rechecking is going on continually, winter and summer, and other machinery and replacements similarly as far as repairs are concerned.

By the Master:

Given a proper reserve of not less than 20 per cent, the normal working capacity of the plants, which could be maintained pretty generally throughout the year, would produce about twice the amount of gas that would be consumed during the year. In other words, the plants are being operating at about 180 days of full capacity—to supply for the 365 days. During the entire period they are operating a reserve of about 50 per cent capacity.

By Mr. Ransom:

That is our year's production, taking into account the factor of the reserve and the factor of repairs and replacements and the time required for those things and the other operating conditions, would produce in a year a quantity of gas amounting to about 50 per cent of what would be produced if it ran to working capacity every day.

By the Master:

In the winter, during the peak demand, we have been down as low as 3 per cent reserve, and there was about 97 [fol. 1613] per cent of capacity in operation. In the system this winter, that is in early winter of 1924, the send-out was about 188,000,000 and it will be down this summer some hot Sunday or the Fourth of July, it will be down to about 50,000,000, that would be 20 per cent of our normal capacity. It would run 25 to 100. Our more ordinary summer situation might be 30 per cent or a little more. That is the minimum.

By Mr. Ransom:

For an ordinary summer, that is during the off peak, we might run 30 or a little more in percentage of our aggregate

working capacity, but the average for the year is about 50 per cent. In the gas business, the maximum demand of consumers upon the capacity of the plant measured by the requirements of the consumers on a single day plus the amount of gas required for the use of the company on that day, plus the amount of the unaccounted for gas as the result of the distribution of that amount. The maximum requirement of any day is the requirements of the consumer plus the requirements of the company plus the unaccounted for gas. The company uses some substantial quantity of gas in its gas operations at its works and buildings and that is taken into account as a factor in the cost of the gas furnished to consumers and it becomes a part of our requirements and likewise the amount that is lost, or unaccounted for. The maximum demand upon plant capacity, that relates to the day of the heaviest requirements through those three features is on the 24 hour operation. There is no doubt that it is advisable and often necessary as a practical operating matter, that the plant capacity of the gas company should be kept in excess of the known maximum day's requirements. It is necessary that our capacity should be such as to provide amply and surely for the pro- [fol. 1614] spective maximum day's requirements. Provision must be made not only for prospective increase in requirements, but there is also a possibility of accidents, which must be provided for; and, in my own experience in the Consolidated Gas Company's system, we have found a maximum increase of 25 per cent over the previous maximum increase. I can recall several years ago that our maximum had been about 118,000,000 and the next maximum we had was 145,000,000 I think. As I remember the figures, it was about 23 to 24 per cent increased maximum over the previous maximum, that is the last known maximum day, it was exceeded suddenly by nearly or completely 25 per cent. Supposing at the time that this sudden increased demand took place and we only had plant capacity enough to barely meet the last previous maximum, there would have been a shortage of gas supply. We have to take into account in determining the amount of that required capacity that we have to provide, the matter of providing for contingencies such as accidents, explosions and fire. That is, one of the contingencies we take into account is the

possibility of the enforced shutting down of the plant. We, at all times, study prospective maximum requirements of our consumers and we can only base our studies on past experience. There are so many things that might enter into in the way of extremely cold weather, for instance. For a long period of time we have noticed, in the last four or five years, with the high price of coal and the cheap price of gas, I should think, as a result of people using a large amount of gas, for heating purposes during these cold spells, that we have no control over and I can say, with a coal shortage in extremely cold weather, our maximum demand would be in-
[fol. 1615] creased 20 per cent. We can control the amount of gas that we manufacture, but we cannot control the send out. Our manufacture is predicated on what the people use. We have no control over what the people are going to use or what the requirements will be, and, of course, it is our duty to meet those requirements. I do not receive any information in advance as to how much gas our consumers are going to use. There is a stoppage of supply unless we have enough gas in the mains. It has to be there at all time- for them to use. That demand varies greatly according to temperature conditions and the time of the year. It does vary according to the price and the available supply of coal for domestic use. Our experience shows it to be the case. When the price of coal was up and the price of gas was down and the shortage of coal was in progress, people turned on more gas. The quantity of gas which we had to send out varied sharply from one day to another in the same season. Even in the winter period I can recall a difference in the system companies of 60 million in two days. Within a year, I should say, in the last six months. It is necessary in order to assure a continuing supply of gas to the consumers for a gas company to provide a plant of a capacity sufficient to meet the maximum requirements of the consumers at any given time with a sufficient reserve for prospective increases and a reserve against a possibility of accident or shut down and it becomes necessary to do this even though during a part of the year, a considerable part of the plant capacity must be idle. That is the experience and practice wherever we have this substantial seasonal variation and wherever we have a continuing increase in the volume of sales and maximum demand, that is

[fol. 1616] so. The volume of the sales of the Consolidated Gas Company and its affiliated companies would mount if its peak or maximum demand was increased or decreased from year to year. The tendency in the last seven years has been much greater than prior to that. In other words, assuming the percentage of increase per annum over a period of 20 years, the percentage of increase per annum during the past seven years was very much greater than for the last 20 years, and especially during the last seven years there has been a sharp tendency upward as to the maximum demand, and the maximum day's requirements. I have made some cadculations as to the requirements, based upon our past experience covering a period of 20 years. Taking a 20 year curve, we would be required to build a plant in order to meet the requirements for the next 16 years—that would bring us to 1940—of X cubic feet. If I should apply the last seven years' experience, we would be required to build that same X capacity of plant by 1934, and that illustrates the extent to which I am confronted now with the sharp increase in the rate of increase. I have that illustrated graphically. There are inter-connections between the plants and holder stations of the Consolidated Gas Company and the plants and holder stations of the Astoria Light, Heat & Power Company and its affiliated companies. The general scheme that interconnection is to avoid any waste or duplication which might be involved if the companies in the transfer system were operating independently. To avoid any duplication in the plant and property, and make use of all the properties of all the companies by the inter-communication and connecting facilities. Prior [fol. 1617] to 1900 various of these companies in Manhattan and the Bronx were operating independently and in competition, and there have been connections made. They were not all made at one time. It has been progressive, as it were, since that time, in order to permit the use of all the properties and also prevent any duplication of expenses which would result if they were not inter-conected. Since there has been this connection and this community of ownership and supervision of operation, it has been the policy to avoid duplication of investments as between the different companies. It is a centralization in order to derive economies in operating cost, both in property and investments,

the use of mains and services, the use of joint facilities, the extending of facilities from one company to the other company, the purchase of supplies and materials for all companies where it can be done by one company, the whole thing for the purpose of getting the best that is possible out of the property in the way of handling materials and supplies, for instance, by having one large inter-connected company. I do not think there is any doubt about standardization and an improvement in the quality of service. There has been—that is, in so far as the quality, all companies furnish the proper quality and in the matter of service, by the use of various mains connecting up, a better distributing pressure has been maintained by connectng up the properties. If each of those companies was separately owned and had been separately operated in this territory, the aggregate investment necessary to render service would be very much greater than the amount of the investment as it stands. I think that there is an economy as well as an advantage in [fol. 1618] service in the purchase of materials in substantial quantities. From my experience, there is economy in this system of joint use for given facilities, that results in economy as compared with the condition if each company had to provide for itself the same facilities. This co-ordination of certain facilities and certain operations of the several companies on the transfer system, built and developed a system of inter-company charges. The basis of the inter-company charges made for services or materials or the use of all facilities is the cost of labor and materials furnished by one company for the benefit of another, the maintenance of the cost of the property, used, the carrying cost at a moderate rate of interest on the investment devoted by one company to another's use, and a reasonable and proper added charge for undistributed expenses. The storage holders and the gas mains of the Consolidated Company and the affiliated companies on the transfer system have been tied in and connected, gradually. As the result of the tying in or the connection of the gas mains and plants it is not possible to identify the source of gas in the holders and gas mains, as having been manufactured at any particular plant or by any particular company. After the gas is manufactured it is sent into the distributing system, large parts of it, and no attempt is made to ascertain or determine whose or what

gas is in the system. Suppose it went from a given plant directly into the distributing system as distinguished from the transmission system, it would be impossible to identify its source, except that it might be identified within several blocks or a few blocks from the particular plant or holder [fol. 1619] station; but beyond that point, inasmuch as the distributing systems are connected at various points, we would not know whether it was the gas from a particular plant or holder station that was being delivered to a certain point or that it was from some other plant or holder, apart from the initial pressures that might be carried at those stations.

Through the supervision over the coal and oil and our own supervision over operations which I have testified to, the Consolidated Company is able to see to it that gas of acceptable quality is received by it on purchase, as well as manufactured by it. We can and do; that is my business. As pressure increases or decreases at one plant or holder station as compared with the decrease or the increase in the distributing pressure at another, the flow of gas would be affected by those pressures. In other words, at one period of the day one plant or holder may be delivering gas to a particular section of the City, whereas in a later part of the day that part of the gas may be coming from another plant or holder. It would depend upon the initial pressures, the draft on the lines, and when you got beyond the point of equilibrium, where two mains were inter-connected, then it would be a question which gas was traveling in which direction. Take a given point on the distribution system, where you have gas coming into that gas distribution area from one plant at a given pressure and gas coming into that area from another plant at a higher pressure, the lower pressure gas, some point it will be backed up. There will be a point which they get to where there is a flow in the lines and it will depend upon the pres- [fol. 1620] sure whether the flow is going to be up or down, and that may vary from time to time. It depends upon the initial pressure of the territory, the holder station or plant that is delivering gas into the distributing system, and the draft on the line. If the draft should be very heavy on one line and not so heavy on another, the one having the higher pressure with the lesser draft would force their

gas into the other company's system. Naturally, the gas in the mains generally do what may be termed following the line of least resistance, that is, it goes where it encounters the least pressure and it yields to the dominant pressure. That is the way in which the flow and distribution and the mixing of the gases in the mains take place, in so far as the distribution system is concerned. As to the transmission system, there is a more direct control in my hands. Gas is going into the transfer system, or is pretty thoroughly mixed at that point, so while we know that one company may be delivering into its own particular system, it will have a mixture of gas may be from two or three or four different works. In the transmission system there has been a thorough mixing. It is not possible for any manufacturing or holder station so to control the pressure at points of delivery as to regulate exactly the amount of gas being supplied into the mains by each company, without affecting the pressure on the district, which in turn would affect the use of the gas by the consumer. I do not know whether you know just how our pressure is regulated. It is done by a remote control. That is, we have automatic pressure guages, automatic telemetric gauges, located in various parts of the city which telegraph [fol. 1621] back to the point of delivery, that is the holder station, as to what the pressure is at that particular point. We try to maintain a fairly constant pressure at these points day and night, whether it is 35, 38 or 40, and as that pressure goes up and down the pressure is regulated at the holder station conveying that particular gauge, to maintain this constant pressure at that point. They are pressure gauges electrically operated, and they report back to the point of delivery, which in our case is largely the outlying distributing holders. Now, it may be that in some cases we have two or three holders which operate on one particular telemetric gauge and at periods of time one holder takes care of it and at another period of time somebody else takes care of it; it varies. But when you speak of regulating the pressure, I only wanted to bring that out, that the pressure is absolutely regulated at the station in accordance with a telemetric gauge out on the district which indicates the pressure which we have on our distributing system at that point, and through the use of those gauges

and the information which they furnish and report back, we are able to maintain the proper and desired pressure.

If a given company or a given plant or holder station undertook to regulate*d* exactly the amount of gas which it was going to put on the district, it would have to set up a higher pressure for the purpose of controlling the situation, and that would disturb the proper maintenance of pressure on the district. If they undertook to do that, that is, if one company undertook to supply its own immediate demand and that alone, they might by the exercise of increased pressure supply their own customer, but as the [fol. 1622] result of the inter-connections, and so forth, there would be a delivery of some of their gas into some other company's mains, which of course would make them a creditor company. We have no means, because of the inter-connection with the transfer system and the connection with the general distributing system, of being able to determine from day to day, that is, so far as the works operation is concerned, the amount of gas required for each company's consumers. Our system of mains and gauges, are adjusted so as to maintain pressure within the limits that are deemed desirable and that are prescribed by a Commission order, that is our pressure maxima and minima, are limited by the Commission, and our system of mains, system of governor houses and system of gauges and connections are designed to keep our pressure within proper limits, under proper operation, and if any single company undertook to send out such a pressure as would enable it to dominate*d* the situation, it would be reflected in the gauges so that it would come to my knowledge and would also tend to affect the consumers. If each company upon this transfer system had sufficient manufacturing plant capacity of its own to meet all of its requirements including a reserve, there would still be a certain amount of exchange of gas. As a result of the inter-connection of the mains, our distributing mains, I tried to state just a moment ago, the plant itself has no means with the connections that exist between the transfer system and the various distributing systems of the companies, of knowing what the particular requirements of that company's consumers are for any given day, and they may estimate they require a certain amount but they have no assurance and

[fol. 1623] no means of determining that that is what is being used by their consumers, because some of their gas may be going into some of the distributing mains of one of the other companies, and in like manner some of the gas from another company may be going into their district. There is a flow and exchange of gas that arises from no other cause than variations in pressure. That must exist so long as there are any interconnections among the distributing system because it becomes one system in some places, as it were, so that if each company had exactly enough manufacturing capacity to meet its own requirements, including a reserve there would still be some interchange of gas. There would also be a variation due to variations in the demands of particular companies. That of course would be possible, that is, assuming that a company has sufficient manufacturing plant and holders to deliver gas to its territory, that could be done by physically disconnecting all of the mains where they are interconnected in the distributing system, in which case it would simply be a burden upon each and every company in putting in new mains and taking care of connections, in order to bring about a proper pressure. This interconnection of mains was economically justifiable and desirable. If each and every company in the transfer system were separated and had a sufficient plant capacity and sufficient transfer system to get gas into their own particular holders and send that gas out to their own particular consumers, then they would be a unit unto themselves, and their investment cost as of today, of each and every company, would be infinitely higher than it is with the interconnection that we have, and aside from that, they would be exactly in the same [fol. 1624] position as we discussed a while ago, where in case anything happened to their plant or their property they would be in no condition or position to get gas from another company. From an operating point of view there would, under those circumstances, assuming each company had enough manufacturing capacity and no more, still be an operating advantage as to flexibility and economy in the transfer system. There is not any doubt about it. The amount of gas exchanged among the companies is not a matter of exact control by me or by them. It depends upon the public. The gas supplied in any particular main

is controlled in a degree by the pressure at the point where the mains are connected. The responsibility of the manufacturing department would be to see that enough gas is manufactured to meet fully the demands of the consumers of all the companies, including unaccounted for and the gas used by the company, headed by myself. That responsibility of course, would naturally come under my supervision; that is, I have charge of the plants. I of course look to my subordinate but I think I would be personally responsible if such a condition existed where we could not make and deliver gas onto the district. I also have to exercise supervision with respect to the holder stations, to see to it that that adequate supply of gas it sent to each of the holders on the district and also the proper maintenance of pressure.

By the Master:

The gas does not go into the storage holders in any particular order. There may be half a dozen holders drawing on the line at the same time, and some of them may be filled up and shut off, when somebody else would then take it. That is regulated largely by the question of [fol. 1625] supply and demand, particularly during the winter. We have a control of our Irving Place office, where we get the amount of gas being made each hour at all of the stations and the amount of gas in all of our distributing holders. That is watched particularly in the winter time, where we find that some holders are going down more rapidly than others and they are getting so much short of gas. Through this control, the man that has plenty of gas at his particular station is told to slow down on his exhausters and not take so much gas, but give it to John Jones at such and such a place and go tell John Jones to go ahead and take the gas. The transmission of gas into various holders in that way can be regulated so that it goes into one holder and not into another.

By Mr. Ransom:

I can regulate the route over which gas is sent from the transmission mains to a given plant. Let us say that the gas is pumped into this room, all of it, and we have a number of outlets from this room. Whoever wants to

draw the gas opens his valve and he takes the gas he wants. In other words, the transfer system is a reservoir of gas from which all take what they require.

By the Master:

All the transfer system is everybody making gas and sending some to the consumer and putting the rest into the mains, and then the different companies drawing on that as they require it.

By Mr. Ransom:

In the winter time when our capacity is taxed and our demand is great, this transfer system enables us to send the gas where it is most needed and it is very carefully watched. Instead of each company having enough gas made to meet its own requirements, we have this common reservoir. We find occasions half a dozen times every winter, when through some minor accident a plant is shut down for two [fol. 1626] or three or four or five hours, some of our plants. Such a plant will not be making gas for those two or three, four or five hours, by reason of that accident, and you have to get gas from somewhere else for them. Let them take a little more gas from uptown or downtown because they are not going to get it from this other place; and that thing is handled, as I say, every day and every hour, and in the winter time when the demand is great it is watched 24 hours of the day. That enables a given company to get along with a narrower margin of manufacturing capacity or reserve than would be required under Metropolitan conditions if each company is operated separately. Because the reserve of all companies is available to any in an emergency.

So far as our company is concerned and the companies on the transfer system, we have our heaviest demand during the winter period. The Consolidated Company has mains which are used exclusively for transferring gas from one point to another; that is, from a manufacturing plant to some outlying distributing holder. These mains are identified in the company's records, as the general transfer system. It is a transfer main and also the transfer mains of the various companies are called the general transfer system. That is, these transfer mains are interconnected and

as so interconnected all of them are called the transfer system. The East River Gas Company has transfer mains, the Standard Gas Light Company has transfer mains; the Northern Union has a small piece of transfer mains. The transfer mains of these affiliated companies are all interconnected with those belonging to the Consolidated Company. I think there is a diagram showing the general loca-
[fol. 1627] tion of the transfer main system. The transfer system means the transfer mains of the Consolidated Company and of the other companies which I have mentioned as interconnected.

The diagram, graphic blue print, headed Gas Transfer System shows the mains and manufacturing stations and holder stations and tunnel shafts; that denotes the situation as to our plants, as they stood on June 1st, 1923. The Hunts Point plant or plant site is not shown on there and the 14th and 42nd Street plants which have since been retired from use are shown as of that day and we have shown in a general way the various transfer mains. It does not show the size or the number.

Diagram received in evidence and marked Plaintiff's Exhibit 832.

In addition to the system of transfer mains there is also a system of distribution mains of each company.

These distribution mains are used by the Consolidated Company and by each of the affiliated companies for delivering gas to their consumers and this diagram does not show distribution mains. The transfer mains of the affiliated gas companies are interconnected with the Consolidated Gas Company's transfer mains and with each other; by means of this transfer system of mains the manufacturing plants situated in Manhattan, The Bronx and Long Island City interconnected so as to make their manufacturing capacity available in the way in which I have described it. Except The Bronx Gas and Electric Company they are in the general transfer system. That does not include the Bronx Gas and Electric Company; that includes the Standard, New Amsterdam, East River, Long Island City, Astoria. It does not include the New York & Queens Gas Company but does include the Central Union, and also the Con-
[fol. 1628] solidated Gas Company, the Astoria, New Am-

sterdam and East River. The Northern Union Company has not any plants in operation at this time. As a part of this interconnection there are certain tunnels built between Long Island City and the Borough of Manhattan and the Bronx. One is known as the Ravenswood Tunnel and the other known as the Astoria tunnel. The Ravenswood Tunnel runs from the foot of Webster Avenue in Long Island City to the foot of East 71st Street, Manhattan. The Astoria Tunnel runs from the southwest corner of the property at Astoria in a northwesterly direction to the foot of East 132nd Street in the Bronx. The manner in which this system of interconnection of the transfer mains and of the connections between the distribution systems of the respective companies and the transfer system affects the direction of the flow of gas produced at the various manufacturing plants depends entirely upon the requirements of some particular plant or holder station as to where the gas will go. Take a given plant, it may go directly into the distribution system, or if at the time it were greatly needed elsewhere, it will either go into the distributing system, that is, into the storage holders at the plant, and from there into the distributing system, and if not there, it will be delivered into the transfer mains and from there put into the distributing holders located throughout various parts of the City, and from these holders afterwards delivered into the distributing mains of the various companies. That is, if it is not required by the situation as to the demand of the consumers of the particular manufacturing company it goes into the transfer system and then into these outlying holders; and in those outlying holders it goes to whatever [fol. 1629] company's consumers need it. As a result of these connections it happens that one company may produce at a given time more gas than its own consumers require, and in like manner another company may produce less gas than its consumers require. That happens right along every month, I should say. The total sendout of all the companies in the system is not any more than that necessary to meet the requirements of all the companies in the system, that is, of all the consumers of all the companies. The actual requirements of each company which keeps an account of its own consumers meters, which records the amount of gas consumed by its consumers, it keeps an ac-

curate record as to the amount of gas that is used in its business, and in addition to this there is a certain amount of gas unaccounted for attributable to both mains and meters and the sum of the gas required by the consumers together with the gas used by the company, plus the unaccounted for gas as a result of this distribution, produces the total requirements of any particular company. Three per cent of all the gas sent out from all the stations is attributable as a loss due to slow consumers' meters, condensation, subjection of the gas on the consumers' premises to a temperature of less than 60 degrees Fahrenheit, stolen gas on consumers' premises; and is allocated between the various companies on the basis of each company's sales to the total sales and used of the system companies. Three per cent of all the gas that has been sent out from the entire system is a loss. Due to the consumers meters, and is allocated on the basis of sales and used of each company, the remaining unaccounted for gas, whatever it may be, is attributable to the losses on mains and services and is allocated to each company on the basis of its mains mileage [fol. 1630] to the total main mileage of all the companies in the system. We know the total amount of gas that is made and sent out by all of the companies on the transfer system, and we know the amount that is sold by all of the companies on the transfer system. There is a practical necessity of making an allocation between the companies of the quantity unaccounted for. We do that in the method which I have just described. We have many meters that are slow and by "slow" meaning in excess of the two per cent slow, that is prescribed by the Commission. It is my experience that meters are more commonly slow than fast, so that on the whole with respect to our meters as they have been placed on the district after inspection and certification by the Commission. There is no doubt that there is a loss of gas from slow meters. An average of the whole would indicate, that is, taking all the meters that are brought in, we find that our meters on the whole will average about 1½ per cent slow and meters tend to become slow on the whole rather than fast. It is my experience that there is a loss in volume of gas as metered on the consumers' premises as a result of a difference in temperature at the time the gas goes through the meter, as compared with the temperature

to which the send out of gas through the station meters is adjusted. For every four degrees less than 60 degrees it represents one per cent of volume, of loss in value, especially at many times of the year gas passes through consumers' meters at a temperature actually below 60 degrees and there is a loss due to that. There is some quantity of gas stolen through by passing and making hootch and various other [fol. 1631] things, especially lately in connection with certain illegal operations that are carried on, unlawful installations by plumbers for one purpose lead also to an unauthorized appropriation of gas, and there is a loss in volume through condensation. The losses attributable to those causes, we apportion on the ratio of the sales and used of the particular company to the total sales and used of the system. The remaining unaccounted for gas, on what we allocate, is the basis of main mileage; that is, it is prorated; that is, whatever remains of the unaccounted for after the three per cent has been deducted is allocated to each company on the basis of each company's main mileage to the total mileage in the system.

By the Master:

It is ascertained, the unaccounted for, by taking the total make or send out of the entire system. We take send-out, that is, there will be very little difference covering a period of a year. We may just as well take the make; it would only be the difference in the heights of the holder from one morning to another. We take the send-out of the entire system as compared with the sales and used of the entire system, and the difference gives us the unaccounted-for for the system, of three per cent of the total send-out. I took three per cent as an allowance for the losses due to meters; and the difference between the send-out and the sold and used, after deducting three per cent represents the balance of the unaccounted for that I apportion on the basis of main mileage.

By Mr. Ransom:

For example, if we sent out 100,000 and our sales and used represented 90,000 the difference between sales and used would be 6,000. Three per cent of 100,000 would —

3,000 which we would allocate to each company on the basis of its sales used to the total sales. The other 3,000 [fol. 1632] would be allocated to each company on the basis of its main mileage to the total mileage. The four factors in the actual requirements of an individual company are the actual sales to its consumers, the actual amount used by the company, the amount charged to the company for loss due to consumers' meters; and the amount charged to the companies for losses by condensation, leakage, etc., of mains and services. The total of these amounts of each company namely, the gas sold and used the amount unaccounted for due to losses in consumers' meters, the amount unaccounted for due to losses in mains, and services, represent the requirements of each company, the total requirements of all companies being the combined send out of all the companies.

By the Master:

It is not possible with an interlocking system, such as we have here, to determine the unaccounted for of any particular company in the district. You cannot, except by the method I described; that is, seeing what the unaccounted for is on any particular system is a method of calculation. There is no way of accurately determining the amount of the unaccounted for of one company as distinguished from another, otherwise than in the manner which I have stated.

By Mr. Ransom:

It is my judgment and experience that the apportionment of the part of the unaccounted for that is attributable to leakage and condensation in the mains and services may fairly be apportioned on the ratio of main mileage and that the loss due to conditions at the meters and on the consumers premises may properly be apportioned on the basis of the ratio of the sales of the particular company to the total sales and used of the system. That is, my basis of [fol. 1633] apportionment is related to the thing which causes the loss. Reports are made by each of the companies of the transfer system to me as well as to the secre-

tary and officers of the Consolidated Gas Company showing the quantities of gas made, the quantities sent out, sold, used and on hand, and so forth. I also receive daily, weekly and monthly reports of the operations of the plants and stations of the companies of the Consolidated System. The important factors in connection with the gas transaction of each of the companies are the quantities of gas on hand, that would be the first figure; the quantity of gas manufactured; the quantity of gas sent out; the quantity of gas sold; the quantity of gas used, by the company. To go into the detail of that, in the manufacturing plants of the Consolidated and the affiliated companies a record is kept of the quantity of gas made as recorded at the station meters. Those are hourly records and also the amount on hand at each hour. There is a record kept of the amount on hand, and the send-out is determined by the gas made, either plus or minus. If the gas on hand had increased, the send out would be less than the make. We determine the amount of gas on hand at the different manufacturing stations and holder stations by determining the height of the holder by scale. We have the contents of the holder and the scale on that holder gives us the cubic contents of the holder as of that time, so, wherever gas is manufactured there is an hourly record kept of the quantity of gas as shown by our station meters, and wherever there is a storage holder, hourly records are kept of the quantity of gas in such holders. There is also a record kept of the hourly send-out. [fol. 1634] That is computed by having ascertained the amount of gas on hand as of a particular hour, the amount of gas made during the next hour and the amount of gas on hand at the end of the next hour, the send-out represents the make, either plus or minus the difference between the on hand at the beginning of the one hour and the end of that hour, so that we have also this continuous record of the hourly send-out in addition to the make and the on-hand. Daily reports of all of these things as to manufacture and send-out of gas by each of the companies on the transfer system are filed with the Consolidated Gas Company, and monthly and periodic statements are made of the operating details of each company and all of those reports and details from each of the companies on the

transfer system come to the Consolidated Company, and they are available for our information and study. The unaccounted for is the difference between the amount sent out by each plant and the amount accounted for as sold and used to consumers and used in the offices and plants of the company, and then we make that distribution of unaccounted for in the manner which you have testified, and then we combine the amount accounted for by each company and the amount unaccounted for which is applicable to the company's gas business, and that gives us what is called the total requirements of each company. To determine what comparison shows whether a company is a creditor or a debtor company, having ascertained the requirements of the company, which, were the amount sold to the consumers plus the gas used, plus the unaccounted for gas due to consumers' meters, plus that due to mains, gives this particular company its requirements for any particular [fol. 1635] time. If during that same period of time that company had sent out from its manufacturing plant or plants a greater quantity of gas than was required by them, considering these four elements entering into it, they would become a creditor company and therefore would sell their gas to some other company who had not made a sufficient amount for its requirements. All of the gas that went into the transfer system represented the requirements of each of the companies, plus the unaccounted for, and if a given company puts into the transfer system more gas than it uses, including its sales and its unaccounted for, obviously some other company took out, and that comparison between a company's requirements and its own send-out determines whether it is a debtor or a creditor company. If it is a creditor company, it bills to the debtor company the amount shown by this computation for the actual cost of the gas. That is, the difference between the amount which it required, and the amount which it itself made. It is billed and whatever the amount may be the debtor company is charged by the creditor company for the amount of gas and the cost per thousand as was indicated the cost to be at the period of time on which it received this gas. Aside from that small quantity sold to four consumers in the immediate vicinity of the plant, and the

quantity used by the Astoria Company in its plants and buildings, the entire output of the Astoria plants is delivered into the general transfer system and used by such company as may require it. Other companies on the transfer system, principally the Consolidated, take and pay for the larger part of it. Of course there are some sales made at times to the Central and Northern Union Company and [fol. 1636] sometimes the Standard. It is all sold to some affiliated company on the transfer system but the Consolidated takes all or a larger part. The send-out of the Astoria Company in determining the exchange of gas, is combined with the combined send-out that is included in the send-out of the other companies. Irrespective of the fact that the Astoria Company really has no substantial requirements of its own, its sales are put in the system. I have prepared an example or illustration which shows, illustratedly and completely, in detail the method of calculating the gas requirements of the several companies of the Consolidated transfer system, and if I were asked the appropriate questions to that end, I would testify to these matters set forth here as an illustration of the method.

(Paper referred to read as follows):

Example showing the method of calculating in determining the gas requirements of the several gas companies of the Consolidated Transfer System, classified as "Gas Transferred," covering any period of time.

In this calculation the "Unaccounted for Gas" is all allocated to the different companies.

1st. Each Manufacturing Plant of a Company keeps an exact record as to the quantity of gas Sent Out from its plant, which may be sent directly to its consumers or into the General Transfer System for use of any Company requiring gas in excess of its own production, or both.

Assuming three Companies which are designated as "A," "B," and "C," we find—

[fol. 1637]

	Company A	Company B	Company C	Total all companies
First Step:				
Gas Sent Out from the Manufacturing Plants (a known quantity)	30,000	20,000	50,000	100,000
Sales & Used of each Company as determined by Consumers' Meters, (a known quantity)	25,000	23,000	36,000	94,000
Unaccounted for—the difference between the Send Out of All Companies and the Sales & Used of All Companies (known quantities)	.....	.....	.....	6,000

From the foregoing, it may be seen that one Company produced more gas than was necessary for its requirements and the others less.

2nd Distribution of "Unaccounted for Gas."—Unaccounted for Gas is the difference between the Gas Sent Out from the Manufacturing Plants, which is a known quantity, and the Sales and Used of All Companies, also a known quantity. It is attributed to Slow Consumers' Meters, Registration of Gas at below 60° Temperature on Consumers' premises, Stolen Gas and Condensation, all of which may and does occur on the consumers' premises, and Condensation, Leaks and Losses in putting in Services or Mains, which may and does occur in Mains and Services.

It is estimated that three per cent of the Total Send Out is lost or Unaccounted for through improper registration of the consumers' meters, the causes of which have been previously stated, and is properly distributed on this basis to each Company in the ratio of each Company's Sales and [fols. 1638–1640] Used to the Total Sales and Used of All Companies.

The remaining Unaccounted for is attributed to losses in Mains and Services and is distributed among the various Companies in the ratio of each Company's main mileage to the total mileage of all Companies.

Second Step:	A	B	C	Total
Sales & Used of Each Company (a known quantity)...	35,000	23,000	36,000	94,000
Ratio of each Company's Sales & Used to total Sales & Used.....	37.234%	24.468%	38.298%	100%
Main Mileage of Each Company (a known quantity)..	25	40	35	100
Ratio of Main Mileage of Each Company to the Total Main Mileage.....	25%	40%	35%	100%

3rd. it is noted that the Unaccounted for Gas amounts to 6,000, or 6% of the total Send Out.

As 3% of the total Send Out is estimated to be lost through consumers' meters, etc., as previously explained, and the total Send Out was 100,000, this 3% amounts to 3,000, and is allocated to each Company on the basis of its ratio of Sales and Used to the total Sales and Used.

The remaining 3,000 of Unaccounted for is distributed among Companies on the basis of each Company's ratio of main mileage to the total mileage.

[fol. 1641] We therefore have—

Third Step:	A	B	C	Total
Sales and Used.....	35,000	23,000	36,000	94,000
Ratio of Each Company's Sales & Used to total Sales & Used.....	37.234%	24.468%	38.298%	100%
Unaccounted for of 3,000 apportioned on Basis of Sales & Used of Each Company.	1,117	734	1,149	3,000
Ratio of Main Mileage of Each Company to System.	25%	40%	35%	100%
Unaccounted for due to Mains—Based upon the Main Mileage of Each Company to Total Mileage.	750	1,200	1,050	3,000
Requirements of Each Company	36,867	24,934	38,199	100,000
Unaccounted for—Per Cent Each Company.....	5.06%	7.76%	5.76%	6.00%

	A	B	C	Total
Send out of Each Company, First Step.....	30,000	20,000	50,000	100,000
Requirements Third Step....	36,867	24,934	38,199	100,000
Requirements in Excess of Own Send Out.....	6,867	4,934	.....	11,801
Send Out in Excess of Own Requirements	.....	.....	11,801	11,801

In this calculation, "C" will sell to "A"—6867 and to "B"—4934, the sum of the two—11,801 being its excess over its own requirements.

[fol. 1642] By Mr. Ransom:

In the manufacture and distribution of gas, the Consolidated Gas Company uses facilities for manufacture and distribution of gas which belongs to other gas companies affiliated with it, although the same were used in the service of Consolidated Gas Company's consumers, and, to a certain extent, other companies use facilities which are owned by the Consolidated Gas Company but are used in transferring and delivering gas to consumers of such other companies. The Consolidated Gas Company of New York, the Astoria Light, Heat & Power Company, the New Amsterdam Gas Company, the East River Gas Company, The Standard Gas Light Company, the Central Union Gas Company and the Northern Union Gas Company are those companies whose plants and mains are so interconnected with its properties [fol. 1643] or facilities and are to some extent jointly used. Before the acquisition of its plant and distributing system by the Consolidated Gas Company, the New York Mutual Gas Light Company was connected with and a part of the transfer system and was operated and co-operated along the lines as to which I testified as to the other companies this morning. The Consolidated Gas Company pays for its use of facilities owned by other companies but devoted wholly or in part to the service of the Consolidated Gas Company's consumers. It pays to the company so owning. The Consolidated Gas Company charges other companies for the extent of their use of facilities which belong to the Consolidated Gas Company and which are used in whole or in part in the service of consumers of such other company or companies. It makes a charge and receives payment. It has been one of my duties for the past ten years at least to ascertain the extent of the use of these properties and to recommend to the officers of the different companies what, in my opinion, such payment should be. I have made my recommendations to the different companies and the officers thereof, in the form of a report made each year giving the investment and the carrying charges on the investment and the allocation of those different charges to the differ-

ent companies. Such a report is made by me each year and signed by the various authorized officers of the different companies each year, whose signatures appear on those reports. Such reports have been adopted and used as a basis. I prepared such a report to cover facilities for the calendar year 1922 and this report which has been marked [fol. 1644] in evidence as Plaintiff's Exhibit No. 765 was the report so made by me and signed by me and the other persons whose signatures appear thereon, and I also similarly prepared a report to cover those charges for the year 1923, and that was signed by me and by the other officers of the different companies whose names appear thereon and adopted by the different companies. This report which has been marked in evidence as Plaintiff's Exhibit 766, is the report so prepared by me for the year 1923. In these reports I have set forth in detail, what in my judgment, the requirements of each gas company are with respect to the facilities jointly used, the amounts representing the original investment in such jointly used properties, the carrying charges upon the properties, and the reasonable allocation of such charges to each company. Those reports were examined or submitted by me to the officers of each of the gas companies interested and an accredited officer of each company goes over the report with me and concurs in its recommendations before they go to the Board of Directors of the different companies, and that concurrence is indicated by signature, following mine. If I were asked the specific questions as to each and every statement contained in these reports marked Plaintiff's Exhibits Nos. 765 and 766, my testimony would be the facts and statements set forth in these reports and the basis set forth therein represents my experience and knowledge and judgment. Under date of March 28, 1924, I sent a communication to Mr. Arthur W. Teele, who has been a witness in this case, setting forth the details of the total of the rates charged on investment to each of the system gas companies for the use [fol. 1645] of its properties by other companies as apportioned and set forth in my report of Jointly Used Facilities for each of the years 1922 and 1923. That communication, of which I show you a copy, correctly sets forth the details of what in my judgment are the charges for Jointly Used Properties which have been apportioned among the re-

spective companies. This Exhibit No. 819 for Identification is a letter dated March 28, 1924, and if I were asked the appropriate questions my answer would embody each of the matters and things set out in this letter. They are true and correct according to my knowledge and judgment. This was signed by me as Chief Engineer. This is a carbon, from my files.

Witness signs carbon copy. The letter referred to is as follows:

EXHIBIT TO TESTIMONY OF GEORGE E. WOODS

Consolidated Gas Company of New York

New York, March 28th, 1924.

Mr. A. W. Teele, Patterson, Teele & Dennis, Building.

DEAR SIR: In compliance with your request for the detail, making up the total of rates charged on investment by each of the System Gas Companies, for use by other companies of its properties, as apportioned and set forth in my report on Jointly Used Facilities for each of the years, 1922 and 1923, I submit, for your information, the following:

[fol. 1646]

Year 1922

	Included in the total rate charged per annum on investment				
	To provide for return on investment	To provide for taxes	To provide for maintenance and repairs	To provide for insurance and retirement expense	Total rate charged
For Use of—					
Mfg. Capacity (incl. Holders and Eqpt.)	8%	2½%	....	1½%	12%
Land for Same	8	2½	....	..	10½
Working Capital	8	..	....	..	8
Mains and Tunnels	8	2½	2%	1½	14

Year 1923

For Use of—					
Mfg. Capacity (incl. Holders and Eqpt.)	8%	2½%	....	½%	11%
Land for Same	8	2½	....	..	10½
Working Capital	8	..	....	..	8
Mains and Tunnels	8	2½	1%	½	12

Yours very truly, Geo. E. Woods, Chief Engineer.

Mr. Ransom: Now, off the record——

(The ensuing discussion was not reported by the stenographer.)

Mr. Donnelly: I think you had better put that on the record.

Mr. Ransom: Very well. In the prior cases, involving companies under the transfer system, the Joint Facilities Reports for the years in that litigation were spread on the record as the testimony of the witness and as such reports, that being done solely as a matter of convenience to all concerned.

[fol. 1647] The exhibits referred to are as follows:

EXHIBIT TO TESTIMONY OF GEORGE E. WOODS

Proposed division of the cost of carrying certain properties among the Consolidated Gas Company of New York, the Astoria Light, Heat and Power Company, the New Amsterdam Gas Company, including the East River Gas Company of Long Island City, the Standard Gas Light Company of the City of New York, the N. Y. Mutual Gas Light Company, the Central Union Gas Company and the Northern Union Gas Company for the Calendar Year 1922.

The Manufacturing Plant of the New York Mutual Gas Light Company having a daily capacity of 24,000 M. cubic feet was acquired by the Consolidated Gas Company of New York on August 31, 1922. In the proposed division of carrying charges hereinafter made, I have assumed that the Consolidated Gas Company owned this plant during the entire year and that 6,053 M. cubic feet of its daily capacity was devoted to the service of the consumers of the Standard Gas Light Company.

Plant Capacities Consolidated Gas Company of N. Y.

East 14th Street	Coal Gas	5,000	M.c.f.
East 21st "	Water Gas	28,500	" " "
West 42nd "	Coal Gas	4,500	" " "
East 99th "	Water Gas	5,500	" " "
Total Consolidated Gas Company (Exclusive of Mutual Plant)			43,500 M.c.f.

The Astoria Light, Heat & Power Company

Coal Gas	20,000	M.c.f.
Water Gas	66,000	" " "
		86,000 " " "

New Amsterdam Gas Company

Water Gas	36,000 " " "
(Carried Forward)	165,500 " " "

(Here follow side folio pages 1648-1720, inclusive.)

Plant Capacities (Brought Forward)		165,500 M.c...
Central Union Gas Company		
Coal Gas	3,800 M.c.f.	
Water Gas	8,000 " " "	11,800 " " "
Standard Gas Light Company		
Water Gas		10,500 " " "
N. Y. Mutual Gas Lt. Co. (Now Consolidated)		
Water Gas		24,000 " " "
Total All Companies in Transfer System		211,800 " " "

Maximum Daily Requirements

During the winter of 1921 and 1922, the maximum day's send out for these Companies was 169,563 M. cubic feet.

I am therefore of the opinion, that in determining the cost of carrying the jointly used properties that the maximum day's requirements should be based upon a send out of not less than 169,563 M. cubic feet.

Reserve Capacity in Excess of Requirements

The combined plant capacity of the Companies is	211,800 M.c.f.
The maximum requirements were and are	169,563 " " "
Reserve Capacity	42,237 " " "
This reserve of 42,237 M. cu. ft. amounts to	24.909326%

Proportionate Use of The Manufacturing Plants of All Companies in Transfer System.
The Total Cubic Feet of Gas Required during the Year 1921 by Each of These Companies, Was as Follows:

	Sold	*Used By Company*	*Unaccounted For*	*Total Requirements*	*Ratio*
Consolidated Gas Company	19,396,607,100	59,293,900	1,048,694,200	20,504,595,200	58.353544%
N. Y. Mutual Gas Light Co	1,992,846,800	5,276,500	152,957,200	2,151,080,500	06.121709
Astoria Lt. Ht. & Pr. Co	179,600	8,834,000	.....	9,013,600	00.025652
New Amsterdam Gas Company	2,135,764,900	5,258,100	161,907,400	2,302,930,400	06.553855
East River Gas Company	1,901,727,700	1,568,200	143,930,200	2,047,226,100	05.826153
Central Union Gas Company	2,933,971,300	5,290,500	179,809,000	3,119,070,800	08.876490
Northern Union Gas Company (*a*)	2,094,033,100	2,568,700 (*b*)	161,871,100 (*c*)	2,258,472,900	06.427335
Standard Gas Light Company	2,553,578,000	4,413,200	188,179,300	2,746,170,500	07.815262
Total	33,008,708,500	92,503,100	2,037,348,400	35,138,560,000	100.000000%

(*a*) Includes Northern Union Gas sold to consumers of the Westchester Lighting Co ..... 106,085,500 cu. ft.
(*b*) " Unaccounted for Gas applicable to gas sold to consumers of Westchester ..... 8,433,700 " "
(*c*) " Gas transferred to Westchester Lighting Company ..... 114,519,200 " "

Allowing for a reserve of 24.909326%, the maximum plant requirement of each Company is:

	Total All Companies Max. Day M. Cu. ft.		*Percent Applicable to Each Co.*	*Maximum Day For Each Company*	*Add for Reserve 24.909326% of Maximum Day*	*Total Maximum Plant Requirem't For each Co.*
Consolidated Gas Co	169,563	x	58.353544%	98,946 M. cu.ft.	24,647 M. cu.ft.	123,593 M. cu.ft.
N. Y. Mutual Gas Lt. Co	169,563	x	06.121709	10,380 " " "	2,586 " " "	12,966 " " "
Astoria Lt. Ht. & Pr. Co	169,563	x	00.025652	43 " " "	11 " " "	54 " " "
New Amsterdam Gas Co	169,563	x	06.553855	11,113 " " "	2,768 " " "	13,881 " " "
East River Gas Co	169,563	x	05.826153	9,879 " " "	2,461 " " "	12,340 " " "
Central Union Gas Co	169,563	x	08.876490	15,051 " " "	3,749 " " "	18,800 " " "
Northern Union Gas Co	169,563	x	06.427335	10,899 " " "	2,714 " " "	13,613 " " "
Standard Gas Light Co	169,563	x	07.815262	13,252 " " "	3,301 " " "	16,553 " " "
Total	169,563	x	100.000000%	169,563 M. cu.ft.	42,237 M. cu.ft.	211,800 M. cu.ft.

It is evident from the foregoing that some Companies are carrying a reserve for other Companies, for which they should be reimbursed.

A Comparison between the Manufacturing Capacity Owned and That Required by Each Company, is as follows:

	Manufacturing Capacity Owned	*Manufacturing Capacity Required With Reserve Of 24.909326%*	*Manufacturing Capacity Required from Other Companies*	*Manufacturing Capacity Available For use by Other Companies*
Consolidated Gas Company	43,500 M. cu.ft.	123,593 M. cu.ft.	80,093 M. cu.ft.	.....
N. Y. Mutual Gas Light Co	24,000 " " "	12,966 " " "	.....	11,034 M. cu.ft.
Astoria Lt. Ht. & Pr. Co	86,000 " " "	54 " " "	.....	85,946 " " "
New Amsterdam Gas Company	36,000 " " "	13,881 " " "	.....	22,119 " " "
East River Gas Company	.....	12,340 " " "	12,340 " " "	.....
Central Union Gas Company	11,800 " " "	18,800 " " "	7,000 " " "	.....
Northern Union Gas Company	.....	13,613 " " "	13,613 " " "	.....
Standard Gas Light Company	10,500 " " "	16,553 " " "	6,053 " " "	.....
Total	211,800 " " "	211,800 " " "	119,099 " " "	119,099 " " "

Based upon the foregoing table, with reserve of 24.909326%, the manufacturing capacity owned by each company having an excess over its own requirements should be apportioned as follows:

			Ratio
Astoria Light Heat & Power Company—Manufacturing Capacity			
To Use of Consolidated Gas Company	75,112	M.c.f.	87.339535%
" " " Northern Union Gas Company	10,834	" " "	12.597674
To Own Use	54	" " "	0.062791
Total Manufacturing Capacity Owned by the Astoria Light Heat & Power Company	86,000	" " "	100.000000%
New Amsterdam Gas Company—Manufacturing Capacity			
To Use of Central Union Gas Company	7,000	M.c.f.	19.444444%
" " " Northern Union Gas Company	2,779	" " "	7.719445
" " " East River Gas Co. of L. I. City	12,340	" " "	34.277778
To Own Use	13,881	" " "	38.558333
Total Manufacturing Capacity owned by the New Amsterdam Gas Company	36,000	" " "	100.000000%
N. Y. Mutual Gas Light Company—Manufacturing Capacity			
To Use of Standard Gas Light Co	6,053	M.c.f.	25.220833%
" " " Consolidated Gas Co	4,981	" " "	20.754167
To Own Use	12,966	" " "	54.025000
Total Manufacturing Capacity (formerly) owned by the N. Y. Mutual Gas Light Company	24,000	" " "	100.000000%

A summary of the foregoing apportionment of Plant Capacity, is as follows:

Devoted To Use of	Manufacturing Plant Capacity (M. Cubic Feet) Owned by Consol. Gas Co.	Owned by Astoria Co.	Owned by New Amsterdam Co.	Owned by Central Union Co.	Owned by Standard Company	Owned by N. Y. Mutual Company	Total Manufacturing Requirement of Each Co.
Consolidated Gas Co	43,500	75,112				4,981	123,593
N. Y. Mutual Gas Lt. Co						12,966	12,966
Astoria Lt. Ht. & Pr. Co		54					54
New Amsterdam Gas Co			13,881				13,881
East River Gas Co			12,340				12,340
Central Union Gas Co			7,000	11,800			18,800
Northern Union Gas Co		10,834	2,779				13,613
Standard Gas Light Co					10,500	6,053	16,553
Total	43,500	86,000	36,000	11,800	10,500	24,000	211,800

For the purpose of computing the charge for the joint use of the investment of the Astoria Light, Heat & Power Company in Manufacturing Plant, Land, Materials and Supplies, etc., I am of the opinion that payments for the year 1922 should be made upon the investment in Plant and Land as shown by its books on December 31, 1921 and working capital of not less than $3,319,000.00, which amount was the average working capital employed by it during the calendar year 1921.

As of October 1, 1919, the manufacturing plant of the New Amsterdam Gas Company and of the N. Y. Mutual Gas Light Company were appraised and a value placed thereon based upon the value of land and prices for labor and materials as of January 1, 1914. The original investment appeared to be not less than the valuation at the 1914 prices. In my judgment the value so ascertained plus the net additions thereto at actual cost to December 31, 1921 together with the average amount of working capital employed at the Manufacturing Plants during the year 1921 represented by materials and supplies for gas making purposes, represents the minimum amount upon which the compensation for the inter company use of these properties should be charged.

For the purpose of computing the charge for the joint use of these plants and land, I am of the opinion, that payments for the year 1922 should be made upon the valuation of the plants and land as so found plus net additions thereto at actual cost to December 31, 1921 and upon the average amount of working capital employed at the Manufacturing Plants during the year 1921.

PROPER CARRYING CHARGES

In my judgment, the proper carrying charge for Manufacturing Capacity owned by the Astoria Light Heat & Power Company, the New Amsterdam Gas Company and the N. Y. Mutual Gas Light Company should be 12% per annum and is intended to include a return of 8% on the investment, the remaining 4% to cover the items, taxes, insurance and renewals and replacement. The item of maintenance or repairs has not been included, this item being included in the cost of gas manufacture.

For land, I have allowed a carrying charge of 10½% to cover the items of return on investment and taxes.

For Materials and Supplies, Cash, Accounts Receivable, etc., I have allowed a carrying charge of 8% to cover the item of return on investment.

(a) *Value of the Astoria Light Heat & Power Co's Plant, etc.*

Manufacturing Plant, incl. Station Holders	$21,372,338.21	@	12% =	$2,564,680.59
Land used for same	3,686,822.37	@	10½% =	387,116.35
Materials and Supplies, Cash and Accounts Receivable	3,319,000.00	@	8% =	265,520.00
Total	$28,378,160.58			$3,217,316.94

(b) *Value of the New Amsterdam Gas Co's Plant*

Manufacturing Plant, incl. Station Holders	$4,655,398.76	@	12% =	$558,647.85
Land used for same	1,068,507.21	@	10½% =	112,193.26
Materials and Supplies for Gas Making	547,147.99	@	8% =	43,771.84
Total	$6,271,053.96			$714,612.95

(c) *Value of N. Y. Mutual Gas Light Co's Plant*

Manufacturing Plant, incl. Station Holders	$3,918,255.09	@	12% =	$470,190.61
Land used for same	1,967,052.75	@	10½% =	206,540.54
Materials and Supplies for Gas Making	233,325.88	@	8% =	18,666.07
Total	$ 6,118,633.72			$695,397.22
Total Astoria, New Amsterdam and Mutual Plants, etc	$40,767,848.26			$4,627,327.11

(a) For detail see schedule "A" herewith.
(b) For detail see schedule "B" herewith.
(c) For detail see schedule "C" herewith.

A summary of the investment in and carrying charges on these plants, land, etc., is as follows:

The Astoria Lt. Ht. & Pr. Co's Investment in Plant, Land, etc.
Devoted to the Use of

Consolidated Gas Co	87.339535%	of	Plant, etc.	$21,372,338.21	= $18,666,500.81	@ 12%	per annum =	$2,239,980.10
	"	"	Land	3,686,822.37	3,220,053.51	@ 10½%	" "	338,105.62
	"	"	M & S, etc.	3,319,000.00	2,898,799.17	@ 8%	" "	231,903.93
Total	87.339535%	"		$28,378,160.58	= $24,785,353.49			$2,809,989.65
Northern Union Gas Co	12.597674%	of	Plant, etc.	21,372,338.21	= 2,692,417.49	@ 12%	per annum =	323,090.10
	"	"	Land	3,686,822.37	464,453.87	@ 10½%	" "	48,767.66
	"	"	M & S, etc.	3,319,000.00	418,116.80	@ 8%	" "	33,449.35
Total	12.597674%	"		$28,378,160.58	$ 3,574,988.16			$ 405,307.11
Astoria Lt. Ht. & Pr. Co	0.062791%	of	Plant, etc.	21,372,338.21	= 13,419.91	@ 12%	per annum =	1,610.39
	"	"	Land	3,686,822.37	2,314.99	@ 10½%	" "	243.07
	"	"	M & S, etc.	3,319,000.00	2,084.03	@ 8%	" "	166.72
Total	0.062791%	"		$28,378,160.58	$ 17,818.93			$ 2,020.18
Total Investment	100%	of	Plant, etc.		21,372,338.21	@ 12%	per annum =	2,564,680.59
	"	"	Land		3,686,822.37	@ 10½%	" "	387,116.35
	"	"	M & S, etc.		3,319,000.00	@ 8%	" "	265,520.00
Total Plant, etc., incl. Land & M & S., etc					$28,378,160.58			$3,217,316.94

New Amsterdam Gas Company's Plant, Land, etc.
Devoted to the Use of

Central Union Gas Co	19.444444%	of	Plant, etc.	$4,655,398.76	=	$ 905,216.40	@	12%	per annum =	$ 108,625.97
	"	"	Land	1,068,507.21		207,765.29	@	10½%	" "	21,815.36
	"	"	M & S, etc.	547,147.99		106,389.88	@	8%	" "	8,511.19
Total	19.444444%	"		$6,271,053.96		$1,219,371.57				$ 138,952.52
Northern Union Gas Co	7.719445%	of	Plant, etc.	4,655,398.76	=	359,370.95	@	12%	per annum =	43,124.51
	"	"	Land	1,068,507.21		82,482.82	@	10½%	" "	8,660.69
	"	"	M & S, etc.	547,147.99		42,236.79	@	8%	" "	3,378.94
Total	7.719445%	"		$6,271,053.96		$484,090.56				$ 55,164.14
N. A. & E. R. Gas Cos	72.836111%	of	Plant, etc.	4,655,398.76	=	3,390,811.41	@	12%	per annum =	406,897.37
	"	"	Land	1,068,507.21		778,259.10	@	10½%	" "	81,717.21
	"	"	M & S, etc.	547,147.99		398,521.32	@	8%	" "	31,881.71
Total	72.836111%	"		6,271,053.96		4,567,591.83				520,496.29
Total Investment	100%	of	Plant, etc.			4,655,398.76	@	12%	per annum =	558,647.85
	"	"	Land			1,068,507.21	@	10½%	" "	112,193.26
	"	"	M & S, etc.			547,147.99	@	8%	" "	43,771.84
Total Plant, incl. Land & Material & Supplies						$6,271,053.96				$714,612.95

N. Y. Mutual Gas Light Company's Plant, Land, etc. (Now owned by Consol. Gas Co.)
Devoted to the Use of

Standard Gas Light Co	25.220833%	of	Plant, etc.	$3,918,255.09	=	$ 988,216.57	@	12%	per annum =	$ 118,585.99
	"	"	Land	1,967,052.75		496,107.09	@	10½%	" "	52,091.24
	"	"	M & S, etc.	233,325.88		58,846.73	@	8%	" "	4,707.74
Total	25.220833%	"		$6,118,633.72		$1,543,170.39				$ 175,384.97
Consolidated Gas Co	20.754167%	of	Plant, etc.	3,918,255.09	=	813,201.21	@	12%	per annum =	97,584.14
	"	"	Land	1,967,052.75		408,245.41	@	10½%	" "	42,865.77
	"	"	M & S	233,325.88		48,424.84	@	8%	" "	3,873.99
Total	20.754167%	"		$6,118,633.72		$1,269,871.46				$ 144,323.90
N. Y. Mutual Gas Lt. Co	54.025000%	of	Plant, etc.	3,918,255.09	=	2,116,837.31	@	12%	per annum =	254,020.48
	"	"	Land	1,967,052.75		1,062,700.25	@	10½%	" "	111,583.53
	"	"	M & S	233,325.88		126,054.31	@	8%	" "	10,084.34
Total	54.025000%	of		$6,118,633.72	=	$3,305,591.87				$ 375,688.35
Total Investment	100%	of	Plant, etc.			3,918,255.09	@	12%	per annum =	470,190.61
	"	"	Land			1,967,052.75	@	10½%	" "	206,540.54
	"	"	M & S			233,325.88	@	8%	" "	18,666.07
Total Plant, incl. Land and Material & Supplies						$6,118,633.72				$ 695,397.22

A summary of the investment in these plants and land, as apportioned, is as follows:

	Devoted to The Use of Consolidated Gas Company	*Devoted to The Use of Cent. Union Gas Company*	*Devoted to The Use of No. Union Gas Company*	*Devoted to The Use of Standard Gas Light Co.*	*Total Devoted To Use of Other Cos.*	*Devoted to The Use of Owner Co.*	*Total*
Investment Owned By							
Astoria Co.							
Plant, etc	$18,666,500.81	.....	$2,692,417.49	.....	$21,358,918.30	$13,419.91	$21,372,338.21
Land	3,220,053.51	.....	464,453.87	.....	3,684,507.38	2,314.99	3,686,822.37
M & S, etc	2,898,799.17	.....	418,116.80	.....	3,316,915.97	2,084.03	3,319,000.00
Total Owned by Astoria	24,785,353.49	.....	3,574,988.16	.....	28,360,341.65	17,818.93	28,378,160.58
New Amsterdam Gas Co.							
Plant, etc	.....	905,216.40	359,370.95	.....	1,264,587.35(a)	3,390,811.41	4,655,398.76
Land	.....	207,765.29	82,482.82	.....	290,248.11(a)	778,259.10	1,068,507.21
M & S, etc	.....	106,389.88	42,236.79	.....	148,626.67(a)	398,521.32	547,147.99
Total Owned by New Amsterdam	.....	1,219,371.57	484,090.56	.....	1,703,462.13(a)	4,567,591.83	6,271,053.96
N. Y. Mutual Gas Lt. Co. Now Consol. Gas							
Plant, etc	(Included with)	.....	.....	988,216.57	988,216.57(b)	2,930,038.52	3,918,255.09
Land	(Owner)	.....	.....	496,107.09	496,107.09(b)	1,470,945.66	1,967,052.75
M & S, etc	(Company)	.....	.....	58,846.73	58,846.73(b)	174,479.15	233,325.88
Total Owned by Mutual	.....	.....	.....	1,543,170.39	1,543,170.39(b)	4,575,463.33	6,118,633.72
Total of Foregoing							
Plant, etc	18,666,500.81	905,216.40	3,051,788.44	988,216.57	23,611,722.22	6,334,269.84	29,945,992.06
Land	3,220,053.51	207,765.29	546,936.69	496,107.09	4,470,862.58	2,251,519.75	6,722,382.33
M & S, etc	2,898,799.17	106,389.88	460,353.59	58,846.73	3,524,389.37	575,084.50	4,099,473.87
Total	$24,785,353.49	$1,219,371.57	$4,059,078.72	$1,543,170.39	$31,606,974.17	$9,160,874.09	$40,767,848.26

(a) Includes investment devoted to the service of consumers of the East River Gas Company of Long Island City.

(b) Includes investment devoted to the service of consumers of both the Consolidated and Mutual Companies.

A summary of the annual carrying charges upon the investment in these Plants, Land, etc., as apportioned in the foregoing, is as follows:

	Payable by Consolidated Gas Company	*Payable by Cent. Union Gas Company*	*Payable by No. Union Gas Company*	*Payable by Standard Gas Lt. Co.*	*Total Am't. Payable by Other Cos.*	*To be borne By Owner Companies*	*Total annual Carrying Charges*
Receivable by Astoria Company							
Plant, etc	$2,239,980.10	.....	$323,090.10	.....	$2,563,070.20	$1,610.39	$2,564,680.59
Land	338,105.62	.....	48,767.66	.....	386,873.28	243.07	387,116.35
M & S, etc	231,903.93	.....	33,449.35	.....	265,353.28	166.72	265,520.00
Total Receivable by Astoria	2,809,989.65	.....	405,307.11	.....	3,215,296.76	2,020.18	3,217,316.94
New Amsterdam Gas Co.							
Plant, etc	.....	108,625.97	43,124.51	.....	151,750.48(a)	406,897.37	558,647.85
Land	.....	21,815.36	8,660.69	.....	30,476.05(a)	81,717.21	112,193.26
M & S, etc	.....	8,511.19	3,378.94	.....	11,890.13(a)	31,881.71	43,771.84
Total Receivable by New Amsterdam	.....	138,952.52	55,164.14	.....	194,116.66(a)	520,496.29	714,612.95
N. Y. Mutual (Now Consol.)							
Plant, etc	.....	.....	.....	118,585.99	118,585.99(b)	351,604.62	470,190.61
Land	.....	.....	.....	52,091.24	52,091.24(b)	154,449.30	206,540.54
M & S, etc	.....	.....	.....	4,707.74	4,707.74(b)	13,958.33	18,666.07
Total Receivable by Mutual (Now Consol.)	.....	.....	.....	175,384.97	175,384.97(b)	520,012.25	695,397.22
Total of Foregoing							
Plant, etc	2,239,980.10	108,625.97	366,214.61	118,585.99	2,833,406.67	760,112.38	3,593,519.05
Land	338,105.62	21,815.36	57,428.35	52,091.24	469,440.57	236,409.58	705,850.15
M & S, etc	231,903.93	8,511.19	36,828.29	4,707.74	281,951.15	46,006.76	327,957.91
Total	$2,809,989.65	$138,952.52	$460,471.25	$175,384.97	$3,584,798.39	$1,042,528.72	$4,627,327.11

(a) Includes carrying charges on the investment devoted to use of the East River Gas Company.
(b) Includes carrying charges on investment devoted to the service of consumers of both the Consolidated and Mutual Companies.

JOINTLY USED PROPERTIES

The cost of carrying certain jointly used mains and tunnels, as heretofore should be divided on the basis of each Company's demand upon the plants located on Long Island to the total demand.

The carrying charge on these properties, in my judgment, should be at the rate of 14% per annum, so as to provide an 8% return on investment, the remainder to cover the items of Taxes, Insurance, Maintenance and Repairs and Renewals and Replacements.

The following are the jointly used mains and tunnels and the value thereof.

Property of the Consolidated Gas Co.			
48" Main in Manhattan and the Bronx connecting two tunnels (not including the Harlem River Main) Estimated Original Cost			$ 885,956.22
Carrying Charge at 14% per annum	$ 124,033.87		
Property of the East River Gas Co. of L. I. City			
Astoria Tunnel, Original Cost, as shown by the Co's. books to 12/31/21, incl. Head Houses and Mains		$5,177,495.03	
Ravenswood or 71st St. Tunnel, incl. Head Houses and Mains (Estimated Original Cost)		700,000.00	
48" and 60" Mains in L. I. City and Astoria original cost as shown by the Co's. books to 12/31/21		846,192.61	
Total East River Property			$6,723,687.64
Carrying Charges at 14% per annum			
Astoria Tunnel	$ 724,849.30		
Ravenswood Tunnel	98,000.00		
48" and 60" Mains	118,466.97		
Total Carrying Chgs. (E. R. Co.)	$ 941,316.27		
Property of the Standard Gas Light Co.			
48" Main under the Harlem River, Original Cost as shown by the Co's. Books to 12/31/21			197,911.54
Carrying Charge at 14% per annum	$ 27,707.62		
Total Carrying Charges upon and investment in these Jointly Used Mains and Tunnels	$1,093,057.76		$7,807,555.40

TIO OF EACH COMPANY'S DEMAND TO THE TOTAL DEMAND UPON THE PLANTS LOCATED ON LONG ISLAND, WHICH SHOULD BE THE BASIS OF THE DIVISION OF THE INVESTMENT $7,807,555.40 AND THE CARRYING CHARGES THEREON AMOUNTING TO $1,093,057.76

				Mfg. Capacity	*Ratio*
Consol. Gas Co's.	demand upon	Astoria Plant	.....	75,112 M.c.f.	61.567213%
Astoria Co's.	" "	"	.....	54 " " "	0.044262%
New Amst. Gas Co's.	" "	Ravenswood	13,881 M.c.f.		
East River Gas Co's.	" "	"	12,340 " " "	26,221 " " "	21.492623%
Central Union Co's.	" "	"	.....	7,000 " " "	5.737705%
No. Union Gas Co's.	" "	"	2,779 " " "		
" " "	" "	Astoria	10,834 " " "	13,613 " " "	11.158197%
Total Manufacturing Capacity of the System Cos. located on Long Island			.....	122,000 " " "	100.000000%

THE APPORTIONMENT OF THE INVESTMENT IN AND OF THE CARRYING CHARGES ON EACH OF THESE JOINTLY USED FACILITIES IS AS FOLLOWS:

Owned by Consolidated Gas Co.

48" Connecting Mains in Manhattan & Bronx

To Astoria Co.....	0.044262%	of $885,956.22	= $	392.14	@ 14%	per ann.	= $	54.90
" N.A. & E.R. Cos..	21.492623%	" "		190,415.23	" "	" "		26,658.13
" Cent. Un. Gas Co.	5.737705%	" "		50,833.55	" "	" "		7,116.70
" No. Union Gas Co.	11.158197%	" "		98,856.74	" "	" "		13,839.94
" Own Use.....	61.567213%	" "		545,458.56	" "	" "		76,364.20
Total.....	100.000000%		$	885,956.22	" "	" "	$	124,033.87

Owned by East River Gas Co. of L. I. City

Astoria Tunnel								
To Consolidated Gas Co	61.567213%	of	$5,177,495.03	=	$3,187,639.39	@ 14%	per annum	= $446,269.52
" Astoria Lt. Ht. & Pr. Co	0.044262%	"	"		2,291.67	" "	"	320.83
" Central Union Gas Co	5.737705%	"	"		297,069.39	" "	"	41,589.72
" Northern Union Gas Co	11.158197%	"	"		577,715.09	" "	"	80,880.10
" Own Use (incl. N. A. Gas Co.)	21.492623%	"	"		1,112,779.49	" "	"	155,789.13
Total	100.000000%	"	"		$5,177,495.03	" "	"	$724,849.30
Ravenswood Tunnel								
To Consolidated Gas Co	61.567213%	of	$ 700,000.00	=	$ 430,970.49	@ 14%	per annum	= $ 60,335.86
" Astoria Lt. Ht. & Pr. Co	0.044262%	"	"		309.83	" "	"	43.38
" Central Union Gas Co	5.737705%	"	"		40,163.94	" "	"	5,622.95
" Northern Union Gas Co	11.158197%	"	"		78,107.38	" "	"	10,935.04
" Own Use (incl. N. A. Gas Co.)	21.492623%	"	"		150,448.36	" "	"	21,062.77
Total	100.000000%	"	"		$700,000.00	" "	"	$98,000.00

48" and 60" Mains on Long Island

To Consolidated Gas Co	61.567213%	of	$ 846,192.61	=	$ 520,977.21	@	14%	per	annum =	$72,936.81
" Astoria Lt. Ht. & Pr. Co	0.044262%	"	"		374.54	"	"	"	"	52.44
" Central Union Gas Co	5.737705%	"	"		48,562.03	"	"	"	"	6,797.28
" Northern Union Gas Co	11.158197%	"	"		94,419.84	"	"	"	"	13,218.78
" Own Use (incl. N. A. Gas Co.)	21.492623%	"	"		181.868.99	"	"	"	"	25,461.66
Total	100.000000%	"	"		$846,192.61	"	"	"	"	$118.466.97

Total East River Gas Co. of L. I. City

To Consolidated Gas Co	61.567213%	of	$6,723,687.64	=	$4,139,587.09	@	14%	per	annum =	$579,542.19
" Astoria Lt. Ht. & Pr. Co	0.044262%	"	"		2,976.04	"	"	"	"	416.65
" Central Union Gas Co	5.737705%	"	"		385,785.36	"	"	"	"	54,009.95
" Northern Union Gas Co	11.158197%	"	"		750,242.31	"	"	"	"	105,033.92
" Own Use (incl. N. A. Gas Co.)	21.492623%	"	"		1,445,096.84	"	"	"	"	202,313.56
Total	100.000000%	"	"		$6,723,687.64	"	"	"		$941,316.27

Owned by the Standard Gas Light Company
48" Main Under the Harlem River

To Consolidated Gas Company	61.567213%	of $	197,911.54	= $	121,848.62	@	14%	per	annum	= $ 17,058.81
" Astoria Lt. Ht. & Pr. Co	0.044262%	"	"		87.60	"	"	"	"	12.27
" New Amsterdam Gas Co. (incl. East River Gas Co.)	21.492623%	"	"		42,536.38	"	"	"	"	5,955.09
" Central Union Gas Co	5.737705%	"	"		11,355.58	"	"	"	"	1,589.78
" Northern Union Gas Co	11.158197%	"	"		22,083.36	"	"	"	"	3,091.67
Total	100.000000%	"	"		$197,911.54	"	"	"	"	$27,707.62

A summary of the investment in these joint facilities as apportioned in the foregoing, is as follows:

Owned by	Devoted to The Use of Consolidated Gas Company	Devoted to The Use of Astoria Company	Devoted to The Use of N. A. & E. R. Gas Cos.	Devoted to The Use of Cent. Union Gas Company	Devoted to The Use of No. Union Gas Company	Total Devoted to The Use of Affil. Cos.	Devoted to the Use of Owner Cos.	Total Investment
Consol. Gas Co.								
48" Conn. Main	.....	$392.14	$190,415.23	$50,833.55	$98,856.74	$340,497.66	$545,458.56	$885,956.22
East River Gas Co.								
Astoria Tunnel	3,187,639.39	2,291.67	.....	297,069.39	577,715.09	4,064,715.54(a)	1,112,779.49	5,177,495.03
Ravenswood Tunnel	430,970.49	309.83	.....	40,163.94	78,107.38	549,551.64(a)	150,448.36	700,000.00
48" & 60" Mains, L. I.	520,977.21	374.54	.....	48,552.03	94,419.84	664,323.62(a)	181,868.99	846,192.61
Total	4,139,587.09	2,976.04	.....	385,785.36	750,242.31	$5,278,590.80(a)	1,445,096.84	6,723,687.64
Standard Gas Light Co.								
48" H. R. Main	121,848.62	87.60	42,536.38	11,355.58	22,083.36	197,911.54	.....	197,911.54
Total	4,261,435.71	3,455.78	232,951.61	447,974.49	871,182.41	5,817,000.00	1,990,555.40	7,807,555.40

(a) Includes investment of the East River Gas Co. which is devoted to the service of the Consumers of the New Amsterdam Gas Co.

A summary of the carrying charges on the investment in these joint facilities as apportioned in the foregoing is as follows:

Owned by	Payable by Consolidated Gas Company	Payable by The Astoria Company	Payable by N. A. Co. (Inc. E. R.)	Payable by Cen. Union Gas Company	Payable by No. Union Gas Company	Total Payable by Affil. Cos.	To be Borne by Owner Cos.	Total Carrying Charges
Consol. Gas Co.								
48" Conn. Main	.....	54.90	26,658.13	7,116.70	13,839.94	47,669.67	76,364.20	124,033.87
East River Gas Co.								
Astoria Tunnel	446,269.52	320.83	.....	41,589.72	80,880.10	569,060.17(a)	155,789.13	724,849.30
Ravenswood Tunnel	60,335.86	43.38	.....	5,622.95	10,935.04	76,937.23(a)	21,062.77	98,000.00
48" & 60" Main, L. I.	72,936.81	52.44	.....	6,797.28	13,218.78	93,005.31(a)	25,461.66	118,466.97
Total	579,542.19	416.65	.....	54,009.95	105,033.92	739,002.71(a)	202,313.56	941,316.27
Standard Gas Light Co.								
48" H. R. Main	17,058.81	12.27	5,955.09	1,589.78	3,091.67	27,707.62	.....	27,707.62
Total	$596,601.00	$483.82	$32,613.22	$62,716.43	$121,965.53	$814,380.00	$278,677.76	$1,093,057.76

(a) Includes carrying charges on E. R. Gas Co's. investment which is devoted to the service of the consumers of the New Amsterdam Gas Co.

The carrying charges on certain facilities which are owned by the Consolidated Gas Company, but devoted to the service of the Central and Northern Union Gas Companies in my opinion should be apportioned between the Central Union and Northern Union Companies upon the ratio of each Company's annual gas requirements to the combined annual requirements of both Companies.

The facilities so used together with the value thereof and the annual carrying charges thereon are as follows:

Kingsbridge Holder and Accessories including Land One Half of the Estimated Original Cost thereof:			
Holder and Accessories		$522,500.00	
Land for same		109,000.00	$631,500.00
Annual Carrying Charge			
Holder & Access. @ 12% per annum =	$62,700.00		
Land " 10½% " " =	11,445.00		
Total	74,145.00		
30" Transfer Mains in the Bronx—from Central Union Works to Kingsbridge Holder			
Estimated Original Cost thereof		409,878.15	
30" Transfer Mains in the Bronx from Locust Avenue and 134th St. to Central Union Works			
Estimated Original Cost thereof		17,609.25	427,487.40
Annual Carrying Charge at 14% per annum	$ 59,848.24		
36" Distributing Mains in the Bronx, from Kingsbridge Holder to Central Union and Northern Union Districts			
Estimated Original Cost thereof			295,625.00
Annual Carrying Charge at 14% per annum	41,387.50		
Total Annual Carrying Charge and Investment in these facilities	$175,380.74		$1,354,612.40

The requirements of the Central Union and Northern Union Gas Companies for the year 1921 and the ratio of each to the combined requirements of both Companies which should be the basis of apportionment between them for the year 1922 of this investment of $1,354,612.40 and the carrying charge thereon of $175,380.74, is as follows:

	Requirements	*Ratio*
Central Union Gas Company	$3,119,070,800 cu. ft.	58.001775%
Northern Union Gas Company	2,258,472,900 " "	41.998225%
Total	5,377,543,700 " "	100.000000%

A summary showing the apportionment between these two companies, of the investment in each of the foregoing facilities, is as follows:

	Investment Devoted to Use of both Companies	*Devoted to use Of Cent. Union (58.001775% of Total Amt.)*	*Devoted to use Of No. Union (41.998225% of Total Amt.)*
Kingsbridge Holder, etc., & Land			
Holder and Accessories	$522,500.00	$303,059.27	$219,440.73
Land	109,000.00	63,221.94	45,778.06
Total Kingsbridge	631,500.00	366,281.21	265,218.79
30" Transfer Mains in the Bronx	427,487.40	247,950.28	179,537.12
36" Distri. Mains in the Bronx	295,625.00	171,467.75	124,157.25
Total	$1,354,612.40	$785,699.24	$568,913.16

A summary showing the carrying charge upon the investment in each of these facilities as apportioned in the foregoing between the Central Union and Northern Union Companies, is as follows:

	Total Annual Carrying Charge	*Payable by Cent. Union Gas Company*	*Payable by No. Union Gas Company*
Kingsbridge Holder, etc., & Land			
Holder and Accessories at 12%	$ 62,700.00	$ 36,367.11	$ 26,332.89
Land at 10½%	11,445.00	6,638.30	4,806.70
Total Kingsbridge	74,145.00	43,005.41	31,139.59
30" Transfer Mains in Bronx at 14%	59,848.24	34,713.04	25,135.20
36" Distri. Mains in Bronx at 14%	41,387.50	24,005.49	17,382.01
Total	175,380.74	101,723.94	73,656.80

perating cost of the Kingsbridge Holder, 60% of which is applicable to the Central Union and Northern Union Companies, should be apportioned between these Companies during the year 1922 on the basis of 58% and 42% respectively.

For the year 1922, an adjustment between the Central Union Gas Company and the Standard Gas Light Company for use of a connecting main of the Central Union Gas Company for supplying gas to the Standard Gas Light Company in the Borough of the Bronx should be made as in 1921, based upon the investment of the Central Union Gas Company in 6,130 feet of 12" main between its works and the mains of the Standard Gas Light Company at 138th Street and Lincoln Avenue ($20,872.65) for which the Central Union is entitled to a carrying charge computed at 14% and amounting to $2,922.17 per annum.

The investment of the Standard Gas Light Company on December 31, 1921, in its 62nd Street Governor and Boiler House and Land which are used jointly with the Consolidated Gas Company as well as the carrying charges thereon, in my opinion should be apportioned between these two Companies during 1922, on the basis of the holder capacity operated at this station and owned by each, namely, to Consolidated Gas Co. 3/13ths and to Standard 10/13ths.

A statement showing the apportionment of the investment and of the carrying charges thereon, is as follows:

	Total			*Devoted to Use of Consol. Gas Co. (3/13ths of Total)*			*Devoted to Use of Standard Gas Light Co. (10/13ths of Total)*		
	Investment	*Rate per Annum*	*Carrying Charges*	*Investment*	*Rate per Annum*	*Carrying Charges*	*Investment*	*Rate per Annum*	*Carrying Charges*
Gov. & Blr. House & Access.	$173,761.72	12%	$20,851.41	$40,098.86	12%	$4,811.86	$133,662.86	12%	$16,039.55
Land	50,000.00	10½%	5,250.00	11,538.46	10½%	1,211.54	38,461.54	10½%	4,038.46
Leasehold	30,000.00	8%	2,400.00	6,923.08	8%	553.85	23,076.92	8%	1,846.15
Total	253,761.72		28,501.41	58,560.40		6,577.25	195,201.32		21,924.16

The investment ($42,756.61) of the Consol. Gas Co. on Dec. 31, 1921, in its small mains in the Bronx (comprising 6, 8, and 12" mains) all of which are devoted exclusively to the use of the Central Union Gas Co. together with the carrying charge thereon, computed at 14% per annum and amounting to $5,985.93, in my opinion should be borne, during the year 1922, by the Central Union Gas Company.

A summary showing the investment of each company in manufacturing plant and other facilities, to the extent such investment is devoted to the service of the consumers of other Gas Companies and is comprised within the proposed distribution thereof as herein set forth for the yea: 1922, is as follows:

	Investment of other Companies Devoted to the Service of the Consumers of the						
	Consolidated Gas Company	*Astoria Company*	*N.A. & E.R. Companies*	*Cent. Union Gas Company*	*No. Union Gas Company*	*Standard Gas Lt. Co.*	*Total*
Owned by							
Consol. Gas Company							
48" Conn. Main	.....	$ 392.14	$ 190,415.23	$ 50,833.55	$ 98,856.74	.....	$ 340,497.66
Kingsbridge Holder & Accessories	.....	.....	.....	363,059.27	219,440.73	.....	522,500.00
" " Land for same	.....	.....	.....	63,221.94	45,778.06	.....	109,000.00
30" Transfer Mains	.....	.....	.....	247,950.28	179,537.12	.....	427,487.40
36" Distributing Mains	.....	.....	.....	171,467.75	124,157.25	.....	295,625.00
Small Bronx Mains	.....	.....	.....	42,756.61	.....	.....	42,756.61
Total	.....	392.14	190,415.23	879,289.40	667,769.90	.....	1,737,866.67
Astoria Company							
Plant & Holders	16,666,500.81	.....	.....	.....	2,692,417.49	.....	21,358,918.30
Land for same	3,220,063.51	.....	.....	.....	464,453.87	.....	3,684,507.38
M & S, etc	2,898,799.17	.....	.....	.....	418,116.80	.....	3,316,915.97
Total	24,785,353.49	.....	.....	.....	3,574,988.16	.....	28,360,341.65
New Amsterdam Gas Co.							
Plant & Holders	.....	.....	.....	905,216.40	359,370.95	.....	1,264,587.35
Land for same	.....	.....	.....	207,765.29	82,482.82	.....	290,248.11
M & S	.....	.....	.....	106,389.88	42,236.79	.....	148,626.67
Total	.....	.....	.....	1,219,371.57	484,090.56	.....	1,703,462.13
East River Gas Co.							
Astoria Tunnel	3,187,639.39	2,291.67	.....	287,069.39	577,715.09	.....	4,054,715.54
Ravenswood Tunnel	430,970.49	309.83	.....	40,163.94	78,107.28	.....	549,551.54
48" & 60" Mains on L. I.	520,977.21	374.54	.....	48,552.03	94,419.84	.....	664,323.62
Total	4,139,587.09	2,976.04	.....	385,785.36	750,242.31	.....	5,278,590.80
Central Union Gas Co.							
12" Main	.....	.....	.....	.....	.....	20,872.65	20,872.65
Standard Gas Light Co.							
48" Harlem River Main	121,848.62	87.60	42,536.38	11,355.55	22,083.36	.....	197,911.54
62nd St. Gov. & Blr. Ho., etc.	40,098.86	.....	.....	.....	.....	.....	40,098.86
" " Land for same	11,533.46	.....	.....	.....	.....	.....	11,533.46
" " Leasehold	6,923.08	.....	.....	.....	.....	.....	6,923.08
Total	180,409.02	87.60	42,536.38	11,355.55	22,083.36	.....	256,471.94
N. Y. Mutual Co. (Now Consol.)							
Plant & Holders	.....	.....	.....	.....	.....	988,216.57	988,216.57
Land	.....	.....	.....	.....	.....	496,107.09	496,107.09
M & S	.....	.....	.....	.....	.....	58,846.73	58,846.73
Total	.....	.....	.....	.....	.....	1,543,170.39	1,543,170.39
Total All Companies	29,105,349.60	9,456.78	232,951.61	2,495,801.91	5,499,174.29	1,564,043.04	38,900,776.23

A summary showing the carrying charge for the year 1922 on the investment of each of the System Gas Companies in manufacturing plant and other facilities which are devoted to the service of the consumers of other Gas Companies, as set forth in the foregoing table, is as follows:

Annual Carrying Charges on the Investment of other Gas Companies devoted to the Service of the Consumers of

	Consolidated Gas Company	*Astoria Company*	*N. A. & E. R. Companies*	*Cent. Union Gas Company*	*No. Union Gas Company*	*Standard Gas Lt. Co.*	Total
Receivable by Consol. Gas Co.							
48" Conn. Main		$54.90	$26,658.13	$ 7,116.70	$12,539.94		$47,668.67
Kingsbridge Holder & Access.				36,367.11	26,332.89		62,700.00
" " Land				6,638.30	4,806.70		11,445.00
30" Transfer Mains				34,713.04	25,136.20		59,849.24
36" Distri. Mains				24,006.49	17,382.01		41,387.50
Small Bronx Mains				5,055.93			5,055.93
Total		54.90	26,658.13	114,020.57	87,496.74		228,034.34
Astoria Company							
Plant & Holders	2,219,360.10				223,050.10		2,442,370.20
Land	338,105.62				45,767.66		383,873.28
M & S, etc	231,903.93				33,449.35		265,353.28
Total	2,789,369.65				302,267.11		3,091,596.76
New Amsterdam Gas Co.							
Plant & Holders				108,625.97	43,124.51		151,750.48
Land				21,816.36	8,860.49		30,676.85
M & S				8,511.19	3,378.94		11,890.13
Total				138,952.52	55,154.14		194,116.66
East River Gas Co.							
Astoria Tunnel	446,269.52	320.53		41,569.72	80,660.10		568,819.87
Ravenswood Tunnel	60,335.66	43.30		5,622.93	10,932.04		76,933.93
48" & 60" Mains	72,936.81	52.44		6,797.25	13,218.78		93,005.28
Total	579,542.19	416.55		54,009.90	105,032.92		738,802.71
Central Union Gas Co.							
12" Main						$2,922.17	2,922.17
Standard Gas Lt. Co.							
48" Harlem River Main	17,058.81	12.27	5,955.09	1,589.78	3,091.67		27,707.62
62" St. Gov. & Blr. Ho., etc.	4,811.86						4,811.86
" " " " " Land for same	1,211.54						1,211.54
" " " " " Leasehold	553.85						553.85
Total	23,636.06	12.27	5,955.09	1,589.78	3,091.67		34,284.87
N. Y. Mutual (Now Consol.)							
Plant & Holders						116,585.99	116,585.99
Land						52,091.24	52,091.24
M & S						4,707.74	4,707.74
Total						(a)176,384.97	176,384.97
Total All Companies	(b) $3,412,167.90	483.02	32,613.22	309,572.82	556,093.58	179,307.14	4,490,244.68

(a) Of this amount ($175,384.97) the sum of $100,112.96 was paid to the N. Y. Mutual Co. and $80,270.99 was paid to the Consolidated Gas Company.

(b) Does not include the sum of $96,181.69 which was paid by the Consolidated Gas Co. for use by it of the Manufacturing Plant of the Mutual Company during the 8 Mos. to August 31, 1922.

SCHEDULE "A"

ASTORIA LIGHT, HEAT AND POWER COMPANY

ASSETS AS OF DECEMBER 31, 1921.

(Taken from Company's Report to the Commission)

	Employed in the Gas Business (1)	*Not Employed in the Gas Business* (2)	*Total Assets Dec. 31, 1921* (3)
Fixed Capital	$25,059,160.58	.....	$25,059,160.58
Investment in Liberty Bonds	.....	$ 782,150.00	782,150.00
Fire Insurance Participation Ctfs.	.....	273,478.62	273,478.62
Materials & Supplies	2,327,233.76	.....	2,327,233.76
Residuals on Hand	105,179.71	.....	105,179.71
Cash on Hand	223,337.00	.....	223,337.00
Accounts Receivable & Advances to Affil. Cos.			
Consumers	12.80	.....	12.80
Bartlett Hayward Co	444.48	.....	444.48
Henry Bower Chemical Company	29,069.64	.....	29,069.64
Barrett Company	48,843.25	.....	48,843.25
Chief of Ordanance U. S. Govt.	.....	(E.R.) 1,588.19	1,588.19
Affiliated Companies	1,931,347.49	(Int.) 30,165.14	1,961,512.63
East River Gas Co. (Tunnel Advances)	.....	5,171,166.70	5,171,166.70
Insurance Trustees	4,415.01	.....	4,415.01
Standard Oil Co. of N. Y.	12,480.12	.....	12,480.12
Sundries	2,068.36	.....	2,068.36
Suspense	3,605.26	.....	3,605.26
Interest and Dividends Receivable	.....	9,403.23	9,403.23
Total	$29,747,197.46	$6,267,951.88	$36,015,149.34

Investment Employed in the Gas Business—Column No. 1

Plant, Holders & Accessories	(a)	$21,372,338.21	
Land	(b)	3,686,822.37	
Working Capital	(c) & (d)	4,688,036.88	
Total			$29,747,197.46

(a) Total Fixed Capital as above $25,059,160.58
Deduct, Value of Land as shown on Schedule "A" page 2 ..... 3,686,822.37 21,372,338.21

(b) As per schedule "A," page 2 .....

(c) Cash 223,337.00
Materials & Supplies (Incl. Residuals) ... 2,432,413.47
Accounts Receivable ..... 2,032,286.41 (d) 4,688,036.88

(d) In place of this amount ($4,688,036.88) in the investment upon which carrying charges are based for the year 1922, as hereinbefore shown, there has been substituted the average working capital required by the Astoria Light, Heat and Power Company during the year 1921 amounting to $3,319,000.00.

SCHEDULE "A" (CONCLUDED)

ASTORIA LIGHT, HEAT & POWER COMPANY

BOOK VALUE OF LAND AT ASTORIA AS OF DECEMBER 31, 1921,

AND

AVERAGE WORKING CAPITAL EMPLOYED DURING THE YEAR 1921.

Value of Land			
Acquired prior to 12/31/08—Land		$1,892,367.37	
	Piers & Bulkheads	281,161.32	$2,173,528.69
Acquired since 12/31/08—	Land	1,019,053.33	
	Assessments	17.35	1,019,070.68
Total (Exclusive of Interest)			$3,192,599.37
Interest during Construction, Applicable to Land			
As shown in Schedule "A" in Joint Facility Report for the year 1921			
Page 26—To March 1, 1904		$ 164,490.90	
Page 27—March 1, 1904 to Dec. 31, 1906		243,499.51	
Page 28—Jan. 1, 1910 to Dec. 31, 1915			
	Improvements to Real Estate	41,426.30	
	Piers and Bulkheads	44,806.29	
No interest appliable to Land, has been capitalized subsequently to Dec. 31, 1915		.....	
Total Interest applicable to Land			494,223.00
Value of Land at Astoria as of December 31, 1921			$3,686,822.37

Average Working Capital Employed		
January	$ 3,952,322.27	
February	3,482,250.47	
March	3,222,772.67	
April	3,426,948.99	
May	2,919,950.79	
June	2,873,303.78	
July	3,272,592.08	
August	2,959,966.69	
September	2,773,457.72	
October	3,333,819.95	
November	3,729,469.13	
December	3,883,710.00	
Total	$39,830,564.54	
Average for the year ($39,830,564.54—12) = $3,319,213.71 say		$3,319,000.00

SCHEDULE "B"

NEW AMSTERDAM GAS COMPANY

ESTIMATED VALUE (BASED UPON PRICES AS OF JANUARY 1, 1914) OF THE RAVENSWOOD PLANT AND EQUIPMENT IN USE OCTOBER 1, 1919, PLUS NET ADDITIONS AT ACTUAL COST TO DECEMBER 31, 1921, INCLUDING VALUE OF LAND TOGETHER WITH THE AVERAGE WORKING CAPITAL EMPLOYED AT THE MANUFACTURING PLANT DURING THE YEAR 1921.

Value of Plant & Land as of October 1, 1914	*Plant And Holders*	*Land*	*Total*
Land	.....	$ 802,000.00	$ 802,000.00
Apparatus Holders & Equipment	$2,333,088.00	.....	2,333,088.00
Omissions and Contingencies	116,654.40	.....	116,654.40
Buildings	594,448.92	.....	594,448.92
Engineering & Contractor's Profit	395,744.87	.....	395,744.87
Administration	85,998.40	.....	85,998.40
Taxes	12,204.00	20,394.00	32,598.00
Organization	201,902.29	50,246.23	252,148.52
Financing	211,366.46	52,601.53	263,967.99
Interest	314,379.13	136,359.40	450,738.53
Total as of October 1st, 1919	$4,265,786.47	$1,061,601.16	$5,327,387.63
Net Additions to Land and Plant since October 1, 1919, at Actual Cost			
3 Mos. to 12/31/19 (Schedule "B" p. 2)	$ 57,643.42	.....	$ 57,643.42
Year 1920 (See Schedule "B" page 2)	174,793.01	$ 3,783.00	178,576.01
Year 1921 (" " " " ")	157,175.86	3,123.05	160,298.91
Total Net Additions since 10/1/19	389,612.29	6,906.05	396,518.34
Total as of December 31, 1921	$4,655,398.76	$1,068,507.21	$5,723,905.97

Average Working Capital Employed at Mfg. Plant Year 1921
Materials and Supplies for Gas Making Purposes:

January	$ 385,816.15
February	488,023.27
March	480,202.30
April	497,565.34
May	498,375.47
June	553,439.37
July	559,430.92
August	483,161.45
September	525,512.82
October	591,403.70
November	743,410.02
December	759,435.05
Total	$6,565,775.86
Average for the year ($6,565,775.86—12) ◆ Employed	$ 547,147.99
Total Value of Plant incl. Working Capital at Plant	$6,271,053.96

SCHEDULE "B" (CONTINUED)

NEW AMSTERDAM GAS COMPANY

DETAIL OF NET ADDITIONS TO LAND, PLANT AND EQUIPMENT AT RAVENSWOOD DURING THE PERIOD FROM OCTOBER 1, 1919 TO DECEMBER 31ST, 1921.

	3 Mos. from Oct. 1 to Dec. 31, 1919	*Calendar Year 1920*	*Calendar Year 1921*	*Total*
Accessory Equipment at Works				
Exhauster	$	$20,226.09	$ 4,315.84	$24,541.93
Mains in Generator House	5,739.38	7,126.45	2,165.70	15,031.53
Station Meters	94.50	.....	16,670.28	16,764.78
Station Meter Connections	.....	1,203.69	3,174.70	4,378.39
Tar Storage Tank	.....	.....	277.70	277.70
Connections, Gen. to Condenser	.....	.....	26,244.85	26,244.85
Pump—Purifier House	.....	.....	150.50	150.50
Accumulator Pump	.....	.....	2,473.84	2,473.84
Coal Cars	.....	450.00	.....	450.00
Gov. Connections	.....	17.29	.....	17.29
Oil Pumps	1,078.86	143.19	.....	1,222.05
General Pumps	.....	650.00	.....	650.00
Works Drip Pump	693.00	19.11	.....	712.11
Tar Circulating System	.....	6,181.96	.....	6,181.96
Exhauster Connections	.....	181.47	.....	181.47
Relief Holder—By-pass	1,720.98	.....	.....	1,720.98
Total Accessory Equipt. at Works	9,326.72	36,199.25	55,473.41	100,999.38
Water Gas Sets & Accessories				
Hydraulic Operation of Stock valve	17,768.57	52,820.82	14,616.59	85,205.98
Recording Pyrometer	.....	330.00	2,600.91	2,930.91
Wash Box Seals	1,896.62	2,375.96	832.42	5,105.00
Generator Steam Lines	.....	421.34	395.46	816.80
H. P. Blowers	11,936.70	1,821.57	599.30	14,357.57
Dist. Collector	.....	1,391.71	736.61	2,128.32
Gen. Guage Board Clocks	.....	.....	148.50	148.50
Flow Meters	.....	.....	632.01	632.01
Total Water Gas Sets & Access.	31,601.89	59,161.40	20,561.80	111,325.09
Furnaces, Boilers & Accessories				
Steam Shovel	.....	18,124.96	177.90	18,302.86
3" Hot Water Meter	.....	.....	210.00	210.00
Boiler Feed Pump	3,931.89	185.18	860.50	4,977.57
Ash Handling Machinery	185.00	1,183.04	218.04	1,586.08
Coal Handling Machinery	4,666.19	2,305.45	442.96	7,414.60
Tar Burning Boilers	.....	.....	915.95	915.95
Ash Chute	.....	.....	255.02	255.02
600 H. P. Boilers	2,360.43	652.97	.....	3,013.40
Verticle Engine	.....	924.81	.....	924.81
Total Furnaces, Boilers and Accessories	$11,143.51	$23,376.41	$3,080.37	$37,600.29

SCHEDULE "B" (CONTINUED)

	3 Mos. from Oct. 1 to Dec. 31, 1919	Calendar Year 1920	Calendar Year 1921	Total
Total (Brought Forward from page 27)	$52,072.12	$118,737.06	$79,115.58	$249,924.76
Purification Apparatus				
Purifier Connec. Changes	$ 7,662.90	$ 37,220.17	$ 10,870.72	$ 55,753.79
Condensers and Connections	7,553.40	3,601.04	10,012.52	21,166.96
Purifiers	.....	.....	587.96	587.96
Deepening Seals	.....	6,512.92	3,215.82	9,728.74
Reinforcing Purifiers	.....	.....	3,028.43	3,028.43
Total Purification Apparatus	15,216.30	47,334.13	27,715.45	90,265.88
Steam Engines				
Boiler Blower Engine	.....	.....	2,221.65	2,221.65
Works and Station Structures				
Wash House	.....	884.32	954.78	1,839.10
Exhauster House	.....	.....	1,217.07	1,217.07
Storage House	.....	.....	24,894.79	24,894.79
Cabinets in Gen. House	.....	.....	67.16	67.16
Lighting System	.....	2,698.00	936.23	3,634.23
Steel Stairway—Purif. House	.....	.....	617.52	617.52
Generator House Sewer	.....	.....	88.98	88.98
Exterior Stairway—Gen. House	.....	.....	944.71	944.71
Iron Fence	.....	.....	10.64	10.64
Steel Coaling Platform	.....	.....	3,975.69	3,975.69
Tar Separator Tank	.....	.....	15,393.27	15,393.27
Total Works & Station Structures	.....	3,582.32	49,100.84	52,683.16
undries				
Improvements to Real Estate	.....	.....	1,200.29	1,200.29
Assessments	.....	3,783.00	1,922.76	5,705.76
Engineering and Suptce	.....	19,125.50	1,827.34	20,952.84
Total Sundries	.....	$ 22,908.50	$4,950.39	$ 27,858.89
Miscellaneous Credits (Net)				
Gas Generating Apparatus	5,820.00	.....	1,000.00	6,820.00
Purification Apparatus	.....	5,825.00	.....	5,825.00
Blast Machinery	3,650.00	.....	.....	3,650.00
Exhauster and Engines	.....	6,310.00	.....	6,310.00
General Connections	175.00	436.00	.....	611.00
Engine	.....	575.00	.....	575.00
Pumps	.....	160.00	1,425.00	1,585.00
Gas Blowers (Commersville)	.....	680.00	.....	680.00
Coal Pockets (Addit. No. 2)	.....	.....	380.00	380.00
Total Miscel. Credits	9,645.00	13,986.00	2,805.00	26,436.00
Total Net Additions	$57,643.42	$178,576.01	$160,298.91	$396,518.34

Resume'

3

	Land.	Plant	Total
9 months to December 31, 1919	--------	$ 57,643.42	$ 57,643.42
Year 1920	$3,783.00	174,793.01	178,576.01
Year 1921	3,123.05	157,175.86	160,298.91
Total Net Additions (2 years & 3 months)	$6.906.05	$389.612.29	$396.518.34

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Resume'

	Land.	Plant	Total
3 months to December 31, 1919 ---------		$ 57,642.42	$ 57,642.42
Year 1920 ----------	$3,783.00	174,793.01	178,576.01.
Year 1921 ----------	3,123.05	157,175.86	160,298.91
Total Net Additions (2 years & 3 months)	$6,906.05	$389,612.29	$396,518.34

Resume'

	Land.	Plant	Total
3 months to December 31, 1919 ---------		$ 57,643.42	$ 57,643.42
Year 1920 ----------	$3,783.00	174,793.01	178,576.01.
Year 1921 ----------	3,123.05	157,175.86	160,298.91
Total Net Additions (2 years & 3 months)	$6,906.05	$389,612.29	$396,518.34

SCHEDULE "C"

NEW YORK MUTUAL GAS LIGHT COMPANY

ESTIMATED VALUE (BASED UPON PRICES PREVAILING AS OF JANUARY 1914) OF MANUFACTURING PLANT AND EQUIPMENT IN USE OCTOBER 1, 1919, PLUS NET ADDITIONS AT ACTUAL COST TO DECEMBER 31, 1921, INCLUDING VALUE OF LAND TOGETHER WITH THE AVERAGE AMOUNT OF WORKING CAPITAL EMPLOYED AT THE MANUFACTURING PLANT DURING THE YEAR 1921.

Value of Plant & Land as of October 1, 1919	*Plant and Holders*	*Land*	*Total*
Land	.....	$1,479,700.00	$1,479,700.00
Apparatus Holders & Equipment	$2,094,229.00	.....	2,094,229.00
Omissions & Contingencies	104,711.45	.....	104,711.45
Buildings	456,934.00	.....	456,934.00
Engineering & Contractors' Profit	345,263.68	.....	345,263.68
Administration	75,028.45	.....	75,028.45
Taxes	20,033.90	39,053.20	59,087.10
Organization	176,465.44	92,686.64	269,152.08
Financing	185,115.71	97,230.11	282,345.82
Interest	274,327.79	251,581.86	525,909.65
Total as of October 1, 1919	$3,732,109.42	$1,960,251.81	$5,692,361.23
Net Additions to Land & Plant since October 1, 1919, at Actual Cost			
3 Mos. to 12/31/19 (See Schedule "A")	17,728.68	.....	17,728.68
Year 1920 (" " "A")	34,893.36	6,800.94	41,694.30
" 1921 (" " "A")	133,523.63	.....	133,523.63
Total Net Additions to 12/31/21	186,145.67	6,800.94	192,946.61
Total Investment in Plant, Holders and Land as of December 31, 1921	$3,918,255.09	$1,967,052.75	$5,885,307.84

Average Working Capital Employed at the Plant during the year 1921
Materials and Supplies for Gas Making

January 31, 1921	$ 242,820.58
February 28	222,089.25
March 31	247,391.48
April 30	238,472.53
May 31	249,742.95
June 30	250,286.14
July 31	246,712.71
August 31	186,375.00
September 30	178,917.52
October 31	236,313.01
November 30	248,197.04
December 31	252,592.37
Total	$2,799,910.58

Average for the year ($2,799,910.58 – 12) = ... $ 233,325.88

Total Value of Plant including Average Working Capital Employed at Plant $6,118,633.72

(a) for detail see Schedule "C" page 2.

SCHEDULE "C"

NEW YORK MUTUAL GAS LIGHT COMPANY

DETAIL OF NET ADDITIONS TO MANUFACTURING PLANT INCLUDING NET ADDITIONS TO LAND FOR PLANT (AT ACTUAL COST) DURING THE PERIOD FROM OCTOBER 1, 1919 TO DECEMBER 31, 1921.

	3 Mos. from Oct. 1 to Dec. 31, 1919	*Calendar Year 1920*	*Calendar Year 1921*	*Total*
Miscellaneous Power Plant Equipt	.....	$ 6,892.45	$ 3,712.21	$ 10,604.66
Furnaces, Boilers & Accessories	.....	5,902.57	58,771.37	64,673.94
Coal Conveyor	$ 1,042.89	177.27	.....	1,220.16
Purifier House & Purifiers	10,002.76	99.00	.....	10,101.76
Miscellaneous Equipment	63.69	1,020.00	.....	1,083.69
Accessory Equipment at Works	2,893.04	7,700.00	7,355.64	17,948.68
Water Gas Sets & Accessories	.....	.....	425.00	425.00
Steam Engines	990.34	.....	51.20	1,041.54
Purification Apparatus	2,723.15	.....	13.79	2,736.94
Works and Station Structures	12.81	.....	62,963.86	62,976.67
Engineering and Superintendence	.....	13,452.07	230.56	13,682.63
Real Estate Assessment	.....	6,800.94	.....	6,800.94
Miscel. Credits—Mfg. Plant	.....	.....	.....	.....
Total Net Additions to Manufacturing Plant	$17,728.68	$41,694.30	$133,523.63	$192,946.61

RESUME

	Plant & Holders	*Land*	*Total*
3 Months—Oct. 1 to Dec. 31, 1919	$ 17,728.68	.....	$ 17,728.68
Year 1920	34,893.36	$ 6,800.94	41,694.30
Year 1921	133,523.63	.....	133,523.63
Total	$186,145.67	$ 6,800.94	$192,946.61

The proposed division of carrying charges as hereinbefore set forth, in my opinion should take effect from January 1st, 1922.

Charges for gas transferred from one company to another during the year 1922, should be computed upon the basis indicated in my report for the year 1921.

Respectfully submitted,

GEO. E. WOODS.

December 19th, 1922.

After examining and carefully considering the above report, the undersigned approve the recommendations and the basis upon which payments should be computed as set forth therein.

W. R. ADDICKS, Vice President—Consolidated Gas Co.
C. G. M. THOMAS, Vice President—Consolidated Gas Co.
R. A. CARTER, Controller—Astoria Lt. Ht. & Pr. Co.
LOUIS H. WERNER, Vice President—Central Union Gas Co.
G. W. DOANE { President { New Amsterdam Gas Co. / Northern Union Gas Co. / Vice President—East River Gas Co.
W. GREELEY HOYT, President—Standard Gas Light Co.

PROPOSED DIVISION OF THE COST OF CARRYING CERTAIN PROPERTIES AMONG THE CONSOLIDATED GAS COMPANY OF NEW YORK, THE ASTORIA LIGHT, HEAT AND POWER COMPANY, THE NEW AMSTERDAM GAS COMPANY, INCLUDING THE EAST RIVER GAS COMPANY OF LONG ISLAND CITY, THE STANDARD GAS LIGHT COMPANY OF THE CITY OF NEW YORK, THE CENTRAL UNION GAS COMPANY, AND THE NORTHERN UNION GAS COMPANY FOR THE CALENDAR YEAR 1923.

Although the 14th Street and 42nd Street Plants of the Consolidated Gas Company were withdrawn from service on November 1st, 1923 and the extension of the Company's 21st Street Plant to offset the loss in Manufacturing Capacity of 14th Street and 42nd Street was put in operation on or about December 1, 1923, in the proposed division of carrying charges hereinafter made, I have assumed that these three plants were in service during the entire year at the rated capacity existing in each plant on January 1st, 1923.

Plant Capacities

Consolidated Gas Company of New York

E. 14th Street— Coal Gas	5,000 M.c.f.		
W. 42nd " " "	4,500 " " "	9,500 M.c.f.	
E. 11th " Water "	24,000 " " "		
E. 21st " " "	28,500 " " "		
E. 99th " " "	5,500 " " "	58,000 " " "	
Total Consolidated Gas Company			67,500 M.c.f.
The Astoria Lt. Ht. & Pr. Co.			
Coal Gas		20,000 M.c.f.	
Water Gas		66,000 " " "	86,000 " " "
New Amsterdam Gas Company			
Water Gas			36,000 " " "
Central Union Gas Company			
Coal Gas		3,800 M.c.f.	
Water Gas		8,000 " " "	11,800 " " "
Standard Gas Light Company			
Water Gas			10,500 " "
Total Plant Capacity of System Gas Co			211,800 " " "

Maximum Daily Requirements

During the winter of 1922 and 1923 the maximum day's send out of these Companies was 179,188 M. cubic feet.

Therefore, for the purpose of determining the cost of carrying the jointly used properties the maximum day's requirement should be based upon a send out of not less than 179,188 M. cubic feet.

Reserve Capacity in excess of Requirements

The combined Plant Capacity of the System Companies is	211,800	M. cu. ft.
The maximum requirements were and are	179,188	" " "
Reserve Capacity	32,612	" " "
This reserve of 32,612 M. cu. ft. amounted to	18.199878%	

Proportionate use of the Manufacturing Plants of All Companies in Transfer System

The total cubic feet of gas required during the year 1922 by each of these Companies was as follows:

	Sold	*Used by Company*	*Unaccounted For*	*Total Requirements*	*Ratio Of each Co. To Combined Of All Cos.*
(*a*) Consol. Gas Co.	21,963,560,800	65,784,500	1,379,318,800	23,408,664,100	64.383122%
Astoria Co.	179,200	9,589,000	.....	9,768,200	00.026866
New Amsterdam Co.	2,168,640,600	4,829,000	189,647,300	2,363,116,900	06.499510
East River Co.	2,018,474,900	1,581,600	176,255,200	2,196,311,700	06.040730
Central Union Co.	2,952,727,100	5,243,300	207,105,600	3,165,076,000	08.705216
(*b*) Northern Union Co.	2,197,872,000	2,921,600	209,914,500	2,410,708,100	06.630405
Standard Co.	2,579,979,800	4,354,600	220,406,600	2,804,741,000	07.714151
Total	33,881,434,400	94,303,600	2,382,648,000	36,358,386,000	100.000000%

(*a*) Includes gas sold by the N. Y. Mutual Gas Light Company for the eight months preceding acquisition by Consolidated Gas Company on August 31, 1922, of the property of that Company.

(*b*) Includes gas supplied to Westchester Lighting Company's Consumers in the 24th Ward of the Boro of the Bronx during the 9 months preceding the acquisition by the No. Union Company on October 1, 1922, of the distribution facilities of the Westchester Company in that district; Includes gas supplied to the Bronx Gas & Electric Co's. Consumers in the Boro of the Bronx, but excludes gas supplied to the Westchester Lighting Company through 20" Emergency Main during the month of December 1922.

Allowing for a reserve capacity of 18.199879% the maximum plant requirement of each Company is as follows:

	Total All Cos. Maximum Day		*Per Cent Of Total Applicable To Each Company*	*Maximum Day For Each Company*	*Add For Reserve 18.199878% of Max. Day*	*Total Max. Plant Requirement of Each Co.*
Consol. Gas Co	179,188	x	64.383122%	115,367 M.c.f.	20,997 M.c.f.	136,364 M.c.f.
Astoria Co	"	x	00.026866%	48 " "	9 " "	57 " "
New Amst. Co	"	x	06.499510%	11,646 " "	2,119 " "	13,765 " "
East River Co	"	x	06.040730%	10,824 " "	1,970 " "	12,794 " "
Central Union Co	"	x	08.705216%	15,599 " "	2,839 " "	18,438 " "
Northern Union Co	"	x	06.630405%	11,881 " "	2,162 " "	14,043 " "
Standard Co	"	x	07.714151%	13,823 " "	2,516 " "	16,339 " "
Total	179,188	x	100.000000%	179,188 " "	32,612 " "	211,800 " "

It is evident from the foregoing that some of the Companies are carrying a reserve for which they should be reimbursed by other Companies.

A comparison between the Manufacturing Capacity owned and that required by each company is as follows:

	Manufacturing Capacity Owned	*Manufacturing Capacity Req'd With a Reserve Of 18.199878%*	*Manufacturing Capacity Required From Other Companies*	*Manufacturing Capacity Available for Use by Other Companies*
Consol. Gas Co	67,500 M.c.f.	136,364 M.c.f.	68,864 M.c.f.	
Astoria Lt. Ht. & Pr. Co	86,000 " "	57 " "	.....	85,943 M.c.f.
New Amsterdam Gas Co	36,000 " "	13,765 " "	.....	22,235 " "
East River Gas Co	.....	12,794 " "	12,794 " "	
Central Union Gas Co	11,800 " "	18,438 " "	6,638 " "	
Northern Union Gas Co	.....	14,043 " "	14,043 " "	
Standard Gas Light Co	10,500 " "	16,339 " "	5,839 " "	
Total	211,800 " "	211,800 " "	108,178 " "	108,178 " "

Based upon the foregoing table, with reserve of 18.199878% the manufacturing capacity owned by each Company having an excess over its individual requirements should be apportioned as follows:

Astoria Lt. Ht. & Pr. Co.—	*Manufacturing Capacity*		*Ratio*
To Use of the Consol. Gas Co	68,864	M.c.f.	80.074419%
" " " Northern Union Gas Co	11,240	" "	13.069767%
" " " Standard Gas Light Co	5,839	" "	06.789535%
" Own Use	57	" "	00.066279%
Total Manufacturing Capacity owned by the Astoria Company	86,000	" "	100.000000%

New Amsterdam Gas Company—	*Manufacturing Capacity*		
To Use of Central Union Gas Co	6,638	M.c.f.	18.438889%
" " " Northern Union Gas Co	2,803	" "	7.786111%
" " " East River Gas Co	12,794	" "	35.538889%
" Own Use	13,765	" "	38.236111%
Total Manufacturing Capacity owned by the New Amsterdam Gas Co	36,000	" "	100.000000%

A summary of the plant capacity devoted to the use of each Company as apportioned and set forth in the foreing tables is as follows:

	Manufacturing Plant Capacity (Thousand cubic feet)							
Owner Company	*Devoted to Use of Consol. Gas Company*	*Devoted to Use of Astoria Lt. Ht. & Pr. Co.*	*Devoted to Use of New Amsterdam Company*	*Devoted to Use of East River Gas Company*	*Devoted to Use of Central Union Gas Company*	*Devoted to Use of Northern Union Gas Company*	*Devoted to Use of Standard Gas Light Company*	*Total Manufacturing Capacity Owned by Each Co.*
Consolidated Gas Company.....	67,500	.....	.....	.....	.....	.....	.....	67,500
Astoria Lt. Ht. & Pr. Co.....	68,864	57	.....	.....	.....	11,240	5,839	86,000
New Amsterdam Gas Company..	.....	.....	13,765	12,794	6,638	2,803	.....	36,000
Central Union Gas Company....	.....	.....	.....	.....	11,800	.....	.....	11,800
Standard Gas Light Company...	.....	.....	.....	.....	.....	.....	10,500	10,500
Total Requirements.....	136,364	57	13,765	12,794	18,438	14,043	16,339	211,800

For the purpose of computing the charge for the joint use of the investment of the Astoria Light, Heat and Power Company in Manufacturing Plant, Land and Working Capital, I am of the opinion that payments for the year 1923 should be made upon its total investment in Plant and Land as shown by its books on December 31, 1922, after deducting therefrom its investment, as of that date, in Apparatus and Land at Lyster Creek to the extent such investment was made for and has since been devoted to the handling and storage of Coal for the New York Edison Company, together with working capital of not less than the average amount employed by it during the calendar year 1922.

As of October 1, 1919, the Manufacturing Plant of the New Amsterdam Gas Company was appraised and a value placed thereon based upon the value of land and prices for labor and materials as of January 1, 1914.

The original investment appeared to be not less than the valuation at the 1914 prices. In my judgment, the value so ascertained plus the net additions thereto at actual cost to December 31, 1922, together with the average amount of working capital employed at the Manufacturing Plant during the year 1922, represented by Materials and Supplies for gas making purposes, represents the minimum amount upon which the compensation for the inter Company use of this property should be charged.

For the purpose of computing the charge for the joint use of this plant and land, I am of the opinion, that payments for the year 1923 should be made upon the valuation of this plant and land as so found, plus net additions thereto at actual cost to December 31, 1922, and upon its average investment during the year 1922 in Materials and Supplies for gas making purposes.

PROPER CARRYING CHARGES

Heretofore the annual carrying charge for manufacturing capacity has been 12% per annum and has included, in addition to 8% for return on investment, a charge of 4% to cover the items of Taxes, Insurance and Retirement Expense, which charge of 4%, exceeds by approximately one per cent the present cost of those items, therefore in my judgment the annual carrying charge, for manufacturing capacity of the Astoria Light Heat and Power Company and of the New Amsterdam Gas Company, for the year 1923, and until found inadequate or excessive, should be 11% per annum. which is intended to provide an 8% return on Investment and 3% to cover the items of Taxes, Insurance and Retirement Expense.

For land, as heretofore I have allowed a carrying charge of 10½% cover return on investment of 8% and taxes of 2½%.

For Working Capital as heretofore I have allowed a carrying charge of 8% to cover the item of return on investment.

(a) THE INVESTMENT IN AND ANNUAL CARRYING CHARGES ON THE ASTORIA LIGHT HEAT AND POWER COMPANY'S PLANT AND WORKING CAPITAL DEVOTED TO GAS COMPANIES IN TRANSFER SYSTEM, IS AS FOLLOWS:

Manufacturing Plant incl. Station Holders, etc	$22,009,437.59	@	11% per ann. =	$2,421,038.13
Land used for same	3,760,306.70	"	10½% " "	394,832.20
Working Capital	3,941,128.45	"	8% "	315,290.28
Total	$29,710,872.74			$3,131,160.61

Apportionment of Carrying Charges on Astoria Plant

To provide for Return on Investment—8%		
Manufacturing Plant & Holders, etc	$1,760,755.01	
Land	300,824.53	
Working Capital	315,290.28	$2,376,869.82
To provide for Taxes, Insurance and Retirement Expense		
Manufacturing Plant & Holders (3%)	$660,283.12	
Land (2½%)	94,007.67	754,290.79
Total		$3,131,160.61

(a) *for statement of investment see Schedule "A" herewith.*

(b) THE INVESTMENT IN AND ANNUAL CARRYING CHARGES ON THE NEW AMSTERDAM GAS COMPANY'S PLANT, LAND AND MATERIALS AND SUPPLIES, IS AS FOLLOWS:

Manufacturing Plant, incl. Station Holders	$4,668,725.64	@	11% per ann. =	$513,559.82
Land used for same	1,070,147.21	"	10½% " "	112,365.46
Materials & Supplies (for gas making purposes)	648,311.83	"	8% " "	51,864.95
Total	$6,387,184.68			$677,790.23

Apportionment of Carrying Charges on New Amsterdam Plant, etc.

To provide for Return on Investment—8%		
Manufacturing Plant & Holders	$373,498.05	
Land	85,611.78	
Materials and Supplies	51,864.95	$ 510,974.78
To provide for Taxes, Insurance and Retirement Expense		
Manufacturing Plant and Holders (3%)	$140,061.77	
Land (2½%)	26,753.68	166,815.45
Total		$ 677,790.23
Total Astoria and New Amsterdam Plants, Land, etc	$36,098,057.42	$3,808,950.84

(b) For statement of investment see Schedule "B" herewith.

The division among the Companies of the investment in and the annual c...rying charges on these plants, based upon the percentage of manufacturing capacity devoted to their use is as follows:

THE ASTORIA LIGHT HEAT & POWER COMPANY'S PLANT

DEVOTED TO USE OF CONSOLIDATED GAS CO.

80.074419% of Plant, etc.	$22,009,437.59	= $17,623,929.28	@ 11% per ann.	=	$1,938,632.22
" " Land	3,760,306.70	3,011,043.74	" 10½% " "		316,159.59
" " Work'g Cap.	3,941,128.45	3,155,835.71	" 8% " "		252,466.86
Total	29,710,872.74	23,790,808.73			2,507,258.67

Apportionment of Carrying Charges applicable to Consolidated Gas Company

To provide for Return on Investment—8%		
Plant, etc	$1,409,914.34	
Land	240,883.50	
Working Capital	252,466.86	$1,903,264.70
To provide for Taxes, Insurance and Retirement Expense		
Plant, etc. (3%)	528,717.88	
Land (2½%)	75,276.09	603,993.97
Total		$2,507,258.67

DEVOTED TO USE OF NORTHERN UNION GAS CO.

13.069767% of Plant, etc.	$22,009,437.59	= $2,876,582.21	@ 11% per ann.	=	$316,424.04
" " Land	3,760,306.70	491,463.32	" 10½% " "		51,603.65
" " Working Cap	3,941,128.45	515,096.31	" 8% " "		41,207.71
Total	29,710,872.74	3,883,141.84			409,235.40

Apportionment of Carrying Charges applicable to Northern Union Gas Company

To provide for Return on Investment—8%		
Plant, etc	$230,126.58	
Land	39,317.06	
Working Capital	41,207.71	310,651.35
To provide for Taxes, Insurance and Retirement Expense		
Plant, etc.(3%)	$86,297.46	
Land (2½%)	12,286.59	98,584.05
Total		$ 409,235.40

Astoria Plant (Carried Forward)	$27,673,950.57	$2,916,494.07

Astoria Plant (Brought Forward)	$27,673,950.57				$2,916,49

DEVOTED TO USE OF STANDARD GAS LIGHT CO.

6.789535% of Plant, etc	$22,009,437.59	= $1,494,338.47	@	11% per ann.	= $164,377.23
" " Land	3,760,306.70	255,307.34	"	10½% " "	26,807.27
" " Working Cap.	3,941,128.45	267,584.29	"	8% " "	21,406.74
Total	$29,710,872.74	$2,017,230.10			$212,591.24

Apportionment of Carrying Charges applicable to Standard Gas Light Company

To provide for Return on Investment—8%		
Plant, etc	$119,547.08	
Land	20,424.59	
Working Capital	21,406.74	161,378.41
To provide for Taxes, Insurance and Retirement Expense		
Plant, etc. (3%)	$44,830.15	
Land (2½%)	6,382.68	51,212.83
Total		$212,591.24

DEVOTED TO USE OF ASTORIA LT. HT. & PR. CO.

0.066279% of Plant, etc	$22,009,437.59	= $14,587.63	@	11% per ann.	= $1,604.64
" " Land	3,760,306.70	2,492.30	"	10½% " "	261.69
" " Work Cap	3,941,128.45	2,612.14	"	8% " "	208.97
Total	$29,710,872.74	$19,692.07			$2,075.30

Apportionment of Carrying Charges applicable to Astoria Lt. Ht. & Pr. Co.

To provide for Return on Investment—8%		
Plant, etc	$1,167.01	
Land	199.38	
Working Capital	208.97	$1,575.36
To provide for Taxes, Insurance and Retirement Expense		
Plant, etc (3%)	437.63	
Land (2½%)	62.31	499.94
Total		$2,075.30
Total Astoria Plant	$29,710,872.74	$3,131,160.61

The New Amsterdam Gas Company's Plant

Devoted to Use of Central Union Gas Co.

18.438889% of Plant, etc.	$4,668,725.64	= $ 860,861.14	@ 11% per ann.	= $ 94,694.72	
" " Land	1,070,147.21	197,323.25	" 10½% " "	20,718.94	
" " M & S	648,311.83	119,541.50	" 8% " "	9,563.32	
Total	$6,387,184.68	$1,177,725.89		$124,976.98	

Apportionment of Carrying Charges applicable to Central Union Gas Company

To provide for Return on Investment—8%		
Plant, etc	$68,868.89	
Land	15,785.86	
Materials and Supplies	9,563.32	$94,218.07
To provide for Taxes, Insurance and Retirement Expense		
Plant, etc. (3%)	$25,825.83	
Land (2½%)	4,933.08	30,758.91
Total		$124,976.98

Devoted to Use of Northern Union Gas Company

7.786111% of Plant, etc.	$4,668,725.64	= $363,512.16	@ 11% per ann.	= $39,986.34	
" " Land	1,070,147.21	83,322.85	" 10½% " "	8,748.90	
" " M & S	648,311.83	50,478.28	" 8% " "	4,038.26	
Total	6,387,184.68	497,313.29		52,773.50	

Apportionment of Carrying Charges applicable to Northern Union Gas Company

To provide for Return on Investment—8%		
Plant, etc	$29,080.97	
Land	6,665.83	
M & S	4,038.26	39,785.06
To provide for Taxes, Insurance and Retirement Expense		
Plant, etc. (3%)	$10,905.37	
Land (2½%)	2,083.07	12,988.44
Total		$52,773.50

New Amsterdam Plant (Carried Forward) $1,675,039.18 $177,750.48

New Amsterdam Plant (Brought Forward)	$1,675,039.18			$177,7[illegible] 48

DEVOTED TO USE OF NEW AMSTERDAM GAS CO.
(INCLUDING EAST RIVER CO. OF L. I. CITY)

73.775000% of Plant, etc.	$4,668,725.64	= $3,444,352.34	@	11%	per ann. =	$378,878.76
" " Land	1,070,147.21	789,501.11	"	10½%	" "	82,897.62
" " M & S	648,311.83	478,292.05	"	8%	" "	38,263.37
Total	$6,387,184.68	$4,712,145.50				500,039.75

Apportionment of Carrying Charges applicable to New Amsterdam and East River Cos.

To provide for Return on Investment—8%		
Plant, etc	$275,548.19	
Land	63,160.09	
Materials and Supplies	38,263.37	$376,971.65
To provide for Taxes, Insurance and Retirement Expense		
Plant, etc (3%)	103,330.57	
Land (2½%)	19,737.53	123,068.10
Total		$500,039.75
Total New Amsterdam Plant	$6,387,184.68	$377,790.23

A summary of the investment in these plants, land and working capital as divided among the Companies and shown in the foregoing, is as follows:

	Devoted To use of Consolidated Gas Company	*Devoted To use of Cent. Union Gas Company*	*Devoted To use of No. Union Gas Company*	*Devoted To use of Standard Gas Light Company*	*Total Devoted To use of Other than Owner Co.*	*Devoted To use of Owner Co.*	*Total Investment*
Investment Owned by Astoria Lt. Ht. & Pr. Co.							
Plant, etc	$17,623,929.28	$	$2,876,582.21	$1,494,338.47	$21,994,849.96	$14,587.63	$22,009,437.59
Land	3,011,043.74		491,463.32	255,307.34	3,757,814.40	2,492.30	3,760,306.70
Working Capital	3,155,835.71		515,096.31	267,584.29	3,938,516.31	2,612.14	3,941,128.45
Total	23,790,808.73		3,883,141.84	2,017,230.10	29,691,180.67	19,692.07	29,710,872.74
New Amsterdam Gas Co.							
Plant, etc		860,861.14	363,512.16		1,224,373.30	(a)3,444,352.34	4,668,725.64
Land		197,323.25	83,322.85		280,646.10	(a) 789,501.11	1,070,147.21
Materials & Supplies		119,541.50	50,478.28		170,019.78	(a) 478,292.05	648,311.83
Total		1,177,725.89	497,313.29		1,675,039.18	(a)4,712,145.50	6,387,184.68
Total of the Foregoing							
Plant, etc	17,623,929.28	860,861.14	3,240,094.37	1,494,338.47	23,219,223.26	3,458,939.97	26,678,163.23
Land	3,011,043.74	197,323.25	574,786.17	255,307.34	4,038,460.50	791,993.41	4,830,453.91
Materials & Supplies	3,155,835.71	119,541.50	565,574.59	267,584.29	4,108,536.09	480,904.19	4,589,440.28
Total	$23,790,808.73	$1,177,725.89	$4,380,455.13	$2,017,230.10	$31,366,219.85	$4,731,837.57	$36,098,057.42

(a) Includes investment devoted to the service of the consumers of the East River Gas Company of Long Island City.

A summary of the annual carrying charges upon the investment in these plants, land and working capital as divided among the Companies and shown in the foregoing, is as follows:

Receivable by	*Payable by Consolidated Gas Company*	*Payable by Cent. Union Gas Company*	*Payable by No. Union Gas Company*	*Payable by Standard Gas Lt. Company*	*Total Payable by Other Companies*	*To Be borne By Owner Companies*	*Total Annual Carrying Charges*
Astoria Lt. Ht. & Pr. Co.							
To provide for							
Return on Investment	$1,903,264.70	$.....	$310,651.35	$161,378.41	$2,375,294.46	$1,575.36	$2,376,869.82
Taxes, Insur. & Retirement Exp	603,993.97	.....	98,584.05	51,212.83	753,790.85	499.94	754,290.79
Total Amount Receivable by the Astoria Co	2,507,258.67	.....	409,235.40	212,591.24	3,129,085.31	2,075.30	3,131,160.61
New Amsterdam Gas Co.							
To provide for							
Return on Investment	.....	94,218.07	39,785.06	.....	134,003.13(a)	376,971.65	510,974.78
Taxes, Insur. & Retirem't Expense	.....	30,758.91	12,988.44	.....	43,747.35(a)	123,068.10	166,815.45
Total Amount Receivable by the New Amst. Gas Co	.....	124,976.98	52,773.50	.....	177,750.48(a)	500,039.75	677,790.23
Total of Foregoing							
To provide for							
Return on Investment	1,903,264.70	94,218.07	350,436.41	161,378.41	2,509,297.59	378,547.01	2,887,844.60
Taxes, Insur. & Retirem't Expense	603,993.97	30,758.91	111,572.49	51,212.83	797,538.20	123,568.04	921,106.24
Total	$2,507,258.67	$124,976.98	$462,008.90	$212,591.24	$3,306,835.79	$502,115.05	$3,808,950.84

(a) Includes carrying charges on the investment devoted to use of the East River Gas Company of Long Island City.

JOINTLY USED PROPERTIES

The cost of carrying certain jointly used mains and tunnels as heretofore should be divided on the basis of each company's demand upon the plants on Long Island to the total demand.

The annual carrying charge on these properties heretofore has been made at the rate of 14% per annum, which included a provision for return on investment of 8% and in addition a charge of 6% to cover the items of taxes, maintenance or repairs, insurance and retirement expense. The provision of 6%, I find, exceeds as of the present time the actual cost of these latter items by approximately 2%; therefore, in my judgment the carrying charge for the year 1923, and until found insufficient or excessive, should be made at the rate of 12% per annum, which is intended to provide a return on investment of 8%, the balance or 4% to cover the items of taxes, maintenance or repairs, insurance and retirement expense.

The jointly used mains and tunnels, together with the value thereof and the amount of annual carrying charges thereon is as follows:

PROPERTY OF THE CONSOLIDATED GAS CO.

48" MAIN IN MANHATTAN AND THE BRONX CONNECTING THE TWO TUNNELS (NOT INCLUDING THE HARLEM RIVER MAIN)

Estimated original cost and annual carrying charge thereon	$885,956.22 @ 12% per ann. =	$106,314.7

Apportionment of Annual Carrying Charge

To provide for return on Investment—8%	$ 70,876.5
To provide for Taxes, Maintenance or Repairs, Insurance and Retirement Expense—4%	35,438.2
Total	$106,314.7

PROPERTY OF THE EAST RIVER GAS CO. OF L. I. CITY

ASTORIA TUNNEL

Original Cost, including head houses and mains as shown by the Co's. books on Dec. 31, 1922, and annual carrying charges thereon ..... $5,177,126.91 @ 12% per ann. = $621,255.23

RAVENSWOOD OR 71ST STREET TUNNEL

Estimated original cost, including head houses and mains and annual carrying charges thereon ..... 700,000.00 @ 12% per ann. = 84,000.00

48" AND 60" MAINS IN L. I. CITY AND ASTORIA

Original Cost, as shown by the Co's. books Dec. 31, 1922 and annual carrying charges thereon ..... 846,192.61 @ 12% per ann. = 101,543.11

Total East River property jointly used ... 6,723,319.62 @ 12% per ann. = 806,798.34

Apportionment of Annual Carrying Charges

To provide for Return on Investment—8%

Astoria Tunnel	$414,170.15	
Ravenswood Tunnel	56,000.00	
48" & 60" Mains	67,696.41	537,865.56

To provide for Taxes, Maintenance or Repairs Insurance and Retirement Expense—4%

Astoria Tunnel	207,085.08	
Ravenswood Tunnel	28,000.00	
48" & 60" Mains	33,847.70	268,932.78
Total		$806,798.34

PROPERTY OF THE STANDARD GAS LIGHT COMPANY

MAIN UNDER THE HARLEM RIVER

Original cost as shown by the Company's books December 31, 1922 and annual carrying charge thereon	$197,911.54 @ 12% per ann. =	$23,749.38

Apportionment of Annual Carrying Charges

To provide for Return on Investment—8%	$15,832.92
" " " Taxes, Maintenance or Repairs, Insurance and Retirement Expense—4%	7,916.46
Total	$23,749.38

Total Mains and Tunnels jointly used	$7,807,187.28 @ 12% per ann. =	$936,862.47

Apportionment of Annual Carrying Charges

To provide for return on Investment—8%	$624,574.98
" " " Taxes, Maintenance or Repairs, Insurance and Retirement Expense—4%	312,287.49
Total	$936,862.47

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THE RATIO OF EACH COMPANY'S DEMAND TO THE TOTAL DEMAND UPON THE PLAN LONG ISLAND, WHICH SHOULD BE THE BASIS OF THE DIVISION OF THE INVESTMENT $7,807,187.28 AND THE CARRYING CHARGES THEREON OF $936,862.47, IS AS FOLLOW

	Mfg. Capacity		*Ratio*
Consolidated Gas Co's demand upon Astoria Plant	68,864	M.c.f.	56.445902
Astoria Co's. " " " "	87	" "	00.046721%
New Amsterdam Gas Co's " " Ravenswood Plant	13,765	" "	11.282787%
East River Gas Co's " " " "	12,794	" "	10.486885%
Central Union Gas Co's " " " "	6,638	" "	05.440984%
Northern Union Gas Co's " "			
Ravenswood Plant 2,803 M.c.f.			
Astoria Plant 11,240 " "	14,043	" "	11.510656%
Standard Gas Lt. Co's demand upon Astoria Plant	5,839	" "	04.786065%
Total Manufacturing Capacity on Long Island devoted to use of System Companies	122,000	" "	100.000000%

The division among the Companies of the investment in and of the carrying charges on these jointly used mains and tunnels is as follows:

PROPERTY OF THE CONSOLIDATED GAS COMPANY

48" CONNECTING MAIN IN MANHATTAN AND THE BRONX

To Astoria Co.	00.046721%	of $885,956.22 = $	413.93 @ 12% per ann. = $		49.67
" N. A. & E. R.	21.769672%	" "	192,869.76 " " " "		23,144.37
" Cent. Union	05.440984%	" "	48,204.74 " " " "		5,784.57
" No. Union Co.	11.510656%	" "	101,979.37 " " " "		12,237.53
" Standard	04.786065%	" "	42,402.44 " " " "		5,088.29
" Own Use	56.445902%	" "	500,085.98 " " " "		60,010.32
Total	100.000000%		$885,956.22		$106,314.75

Apportionment of Annual Carrying Charges

	To provide for Return on Investment (8%)	*To provide for Taxes, Misc. or Repairs, Ins. and Retirement Exp. (4%)*	*Total (12%)*
Astoria Co.	$ 33.12	$ 16.55	$ 49.67
N. A. & E. R. Cos.	15,429.58	7,714.79	23,144.37
Central Union Co.	3,856.38	1,928.19	5,784.57
Northern Union Co.	8,158.35	4,079.18	12,237.53
Standard Gas Light Co.	3,392.19	1,696.10	5,088.29
Own Use	40,006.88	20,003.44	60,010.32
Total	$70,876.50	$35,438.25	$106,314.75

Property of the East River Gas Co. of L. I. City

Astoria Tunnel

To Con. Gas Co.	56.445302%	of	$5,177,126.91	=	$2,922,275.98	@ 12%	per ann.	= $350,673.12
" Astoria Co.	00.046721%	"	"		2,418.80	"	"	290.25
" Central Union	05.440984%	"	"		281,686.65	"	"	33,802.40
" No. Union	11.510656%	"	"		595,921.27	"	"	71,510.55
" Standard	04.780065%	"	"		247,780.66	"	"	29,733.68
" Own use (incl. New Amst.)	21.769672%	"	"		1,127,043.55	"	"	135,245.23
Total	100.000000%				$5,177,126.91			$621,255.23

Apportionment of Annual Carrying Charges of Astoria Tunnel

	To provide for Return on Investment (8%)	*To provide for Taxes, Misc. or Repairs, Ins. and Retirement Exp. (4%)*	*Total (12%)*
To Consol. Gas Co.	$233,782.08	$116,891.04	$350,673.12
" Astoria Co.	193.50	96.75	290.25
" Central Union Co.	22,534.93	11,267.47	33,802.40
" Northern Union Co.	47,673.70	23,836.85	71,510.55
" Standard Gas Lt. Co.	19,822.45	9,911.23	29,733.68
" Own Use (incl. N. A.)	90,163.49	45,081.74	135,245.23
Total	$414,170.15	$207,085.08	$621,255.23

Ravenswood or 71st Street Tunnel

To Con. Gas Co.	56.443932%	of	$700,000.00	=	$395,121.31	@ 12%	per ann.	= $47,414.56
" Astoria Co.	00.046721%	"	"		327.05	"	"	39.25
" Central Union	05.440984%	"	"		38,086.89	"	"	4,570.43
" Northern Union	11.510656%	"	"		80,574.59	"	"	9,668.95
" Standard Co.	04.780065%	"	"		33,502.46	"	"	4,020.29
" Own Use (incl. New Amst)	21.769672%	"	"		152,387.70	"	"	18,286.52
Total	100.000000%				$700,000.00			$84,000.00

Apportionment of Annual Carrying Charges on Ravenswood Tunnel

	To provide for Return on Investment (8%)	*To provide for Taxes, Misc. or Repairs, Ins. and Retirement Exp. (4%)*	*Total (12%)*
To Consol. Gas Co.	$31,609.71	$15,804.85	$47,414.56
" Astoria Company	26.17	13.08	39.25
" Central Union Co.	3,046.95	1,523.48	4,570.43
" Northern Union Co.	6,445.97	3,222.98	9,668.95
" Standard Gas Lt. Co.	2,680.19	1,340.10	4,020.29
" Own Use (incl. N. A.)	12,191.01	6,095.51	18,286.52
Total	$56,000.00	$28,000.00	$84,000.00

East River Property (carried forward) ..... $5,877,126.91 at 12% per ann. $705,255.23

East River Property (Brought Forward)..... $5,871,126.91 @ 12% per ann. = $705,255 %

48" AND 60" MAINS ON LONG ISLAND

To Con. Gas Co....	56.445902%	of	$846,192.61	=	$477,641.05	@	12% per ann.	= $57,316.92
" Astoria Co.....	00.046721%	"	"		395.35	"	" " "	47.44
" Central Union..	05.440984%	"	"		46,041.20	"	" " "	5,524.94
" No. Union.....	11.510656%	"	"		97,402.32	"	" " "	11,688.28
" Standard.....	04.786065%	"	"		40,499.33	"	" " "	4,859.92
" Own use (incl. New Amst.)....	21.769672%	"	"		184,213.36	"	" " "	22,105.61
Total.....	100.000000%				846,192.61	"	" " "	101,543.11

Apportionment of Annual Carrying Charges on 48" and 60" Mains on L. I.

	To provide for Return on Investment (8%)	*To provide for Taxes, Mtce. or Repairs, Ins. and Retirement Exp. (4%)*	*Total (12%)*
To Consol. Gas Co.....	$38,211.28	$19,105.64	$57,316.92
" Astoria Co.....	31.63	15.81	47.44
" Central Union Co.....	3,683.30	1,841.64	5,524.94
" Northern Union Co.....	7,792.18	3,896.10	11,688.28
" Standard Gas Lt. Co.....	3,239.95	1,619.97	4,859.92
" Own Use (incl. N. A.).....	14,737.07	7,368.54	22,105.61
Total.....	$67,695.41	$33,847.70	$101,543.11

TOTAL EAST RIVER PROPERTY JOINTLY USED

To Con.Gas Co.	56.445902%	of	$6,723,319.52	=	$3,795,038.34	@	12% per ann.	= $455,404.60
" Astoria Co..	00.046721%	"	"		3,141.20	"	" " "	376.94
" Cent.Union..	05.440984%	"	"		365,814.74	"	" " "	43,897.77
" No. Union..	11.510656%	"	"		773,898.18	"	" " "	92,867.78
" Standard Co.	04.786065%	"	"		321,782.45	"	" " "	38,613.89
" Own Use (incl. New Amst.)	21.769672%	"	"		1,463,644.61	"	" " "	175,637.36
Total...	100.000000%				$6,723,319.52			$806,798.34

Apportionment of Annual Carrying Charges on Total East River Property jointly used

	To provide for Return on Investment (8%)	*To provide for Taxes, Mtce. or Repairs, Ins. and Retirement Exp. (4%)*	*Total (12%)*
To Consol. Gas Co.....	$303,603.07	$151,801.53	$455,404.60
" Astoria Co.....	251.30	125.64	376.94
" Central Union Co.....	29,265.18	14,632.59	43,897.77
" Northern Union.....	61,911.85	30,955.93	92,867.78
" Standard Gas Lt. Co.....	25,742.59	12,871.30	38,613.89
" Own Use (incl. N. A.)....	117,091.57	58,545.79	175,637.36
Total.....	$537,865.56	$268,932.78	$806,798.34

PROPERTY OF THE STANDARD GAS LIGHT CO.

48" HARLEM RIVER MAIN

To Con. Gas Co....	56.445902%	of	$197,911.54	=	$111,712.95	@ 12%	per ann. =	$13,405.55
" Astoria Co.....	00.046721%	"	"		92.47	" "	" "	11.10
" N. A. & E. R...	21.769672%	"	"		43,084.69	" "	" "	5,170.16
" Cent. Union....	05.440984%	"	"		10,768.34	" "	" "	1,292.20
" No. Union.....	11.510656%	"	"		22,780.92	" "	" "	2,733.71
" Own Use.....	04.786065%	"	"		9,472.17	" "	" "	1,136.66
Total.....	100.000000%				$197,911.54			$23,749.38

Apportionment of Annual Carrying Charges on 48" Harlem River Main

	To provide for Return on Investment (8%)	*To provide for Taxes, Mtce. or Repairs, Ins. and Retirement Exp. (4%)*	*Total (12%)*
To Consol. Gas Co.....	$8,937.03	$4,468.52	$13,405.55
" Astoria Co.....	7.40	3.70	11.10
" N. A. & E. R. Cos.....	3,446.77	1,723.39	5,170.16
" Central Union.....	861.47	430.73	1,292.20
" Northern Union.....	1,822.48	911.23	2,733.71
" Own Use.....	757.77	378.89	1,136.66
Total.....	$15,832.92	$7,916.46	$23,749.38

A summary of the investment in these jointly used mains and tunnels as divided among the Companies and shown in the foregoing, is as follows:

	Devoted To use of Consol. Gas Company	*Devoted To use of Astoria Company*	*Devoted To use of N.A.& E.R. Companies*	*Devoted To use of Central Union Company*	*Devoted To use of Northern Union Company*	*Devoted To use of Standard Gas Lt. Company*	*Devoted To use of Other than The owner Companies*	*Devoted To use Of owner Company*	*Total Investment*
Owned by									
Consolidated Gas Co.									
48" Connecting Main	$.....	$413.93	$192,869.76	$48,204.74	$101,979.37	$42,402.44	$385,870.24	$500,085.98	$885,956.22
East River Gas Co. of L. I. City									
Astoria Tunnel	2,922,275.98	2,418.80	.....	281,686.65	595,921.27	247,780.66	4,050,083.36 (a)	1,127,043.55	5,177,126.91
Ravenswood or 71st St. Tunnel	395,121.31	327.05	.....	38,086.89	80,574.59	33,502.46	547,612.30 (a)	152,387.70	700,000.00
48" & 60" Mains on L. I.	477,641.05	395.35	.....	46,041.20	97,402.32	40,499.33	661,979.25 (a)	184,213.36	846,192.61
Total	3,795,038.34	3,141.20	.....	365,814.74	773,898.18	321,782.45	5,259.674.91 (a)	1,463,644.61	6,723,319.52
Standard Gas Light Company									
48" Harlem River Main	111,712.95	92.47	43,084.69	10,768.34	22,780.92	.....	188,439.37	9,472.17	197,911.54
Total	3,906,751.29	3,647.60	235,954.45	424,787.82	898,658.47	364,184.89	5,833,984.52	1,973,202.76	7,807,187.28

(a) Includes investment of the East River Gas Company which is devoted to the service of consumers of the New Amsterdam Gas Company.

A summary of the annual carrying charges on these jointly used mains and tunnels as divided among the Companies and set forth in the foregoing, is as follows:

	Payable By the Consol. Gas Company	Payable By the Astoria Company	Payable By the N. A. & E. R. Companies	Payable By the Central Union Company	Payable By the Northern Union Company	Payable By the Standard Gas-Lt. Company	Total Payable by Affil. Companies	To Be Borne By Owner Companies	Total Annual Carrying Charges
Receivable by									
Consolidated Gas Co.									
48" Connecting Main									
To provide for Return on Investment (8%)..	$.....	$33.12	$15,429.58	$3,856.38	$8,158.35	$3,392.19	$30,869.62	$40,006.88	$70,876.50
" " " Taxes, Mtce. or Repairs, Ins. & Retirement Exp. (4%).....	.....	16.55	7,714.79	1,928.19	4,079.18	1,696.10	15,434.81	20,003.44	35,438.25
Total (12%).....	.....	49.67	23,144.37	5,784.57	12,237.53	5,088.29	46,304.43	60,010.32	106,314.75
East River Gas Co.									
To provide for Return on Investment (8%)									
Astoria Tunnel.....	233,782.08	193.50	.....	22,534.93	47,673.70	19,822.45	324,006.66	(a) 90,163.49	414,170.15
Ravenswood Tunnel.....	31,609.71	26.17	.....	3,046.95	6,445.97	2,680.19	43,808.99	(a) 12,191.01	56,000.00
48" & 60" Mains on L. I.....	38,211.28	31.63	.....	3,683.30	7,792.18	3,239.95	52,958.34	(a) 14,737.07	67,695.41
Total (8%).....	303,603.07	251.30	.....	29,265.18	61,911.85	25,742.59	420,773.99	(a) 117,091.57	537,865.56
To provide for Taxes, Mtce. or Repairs, Insurance & Retirement Expense (4%)									
Astoria Tunnel.....	116,891.04	96.75	.....	11,267.47	23,836.85	9,911.23	162,003.34	(a) 45,081.74	207,085.08
Ravenswood Tunnel.....	15,804.85	13.08	.....	1,523.48	3,222.98	1,340.10	21,904.49	(a) 6,095.51	28,000.00
48" & 60" Mains on L. I.....	19,105.64	15.81	.....	1,841.64	3,896.10	1,619.97	26,479.16	(a) 7,368.54	33,847.70
Total (4%).....	151,801.53	125.64	.....	14,632.59	30,955.93	12,871.30	210,386.99	(a) 58,545.79	268,932.78
Total Receivable by East River Co.									
Astoria Tunnel.....	350,673.12	290.25	.....	33,802.40	71,510.55	29,733.68	486,010.00	(a)135,245.23	621,255.23
Ravenswood Tunnel.....	47,414.56	39.25	.....	4,570.43	9,668.95	4,020.29	65,713.48	(a) 18,286.52	84,000.00
48" & 60" Mains on L. I.....	57,316.92	47.44	.....	5,524.94	11,688.28	4,859.92	79,437.50	(a) 22,105.61	101,543.11
Total (12%).....	455,404.60	376.94	.....	43,897.77	92,867.78	38,613.89	631,160.98	(a)175,637.36	806,798.34
Standard Gas Light Co.									
48" Harlem River Main									
To provide for Return on Investment (8%)..	8,937.03	7.40	3,446.77	861.47	1,822.48	.....	15,075.15	757.77	15,832.92
" " " Taxes, Mtce. or Repairs Ins. & Retirement Exp. (4%).....	4,468.52	3.70	1,723.39	430.73	911.23	.....	7,537.57	378.89	7,916.46
Total (12%).....	13,405.55	11.10	5,170.16	1,292.20	2,733.71	.....	22,612.72	1,136.66	23,749.38
Total Mains & Tunnels jointly used									
To provide for Return on Investment (8%).	312,540.10	291.82	18,876.35	33,983.03	71,892.68	29,134.78	466,718.76	157,856.22	624,574.98
" " " Taxes, Mtce. or Repairs Ins. & Retirement Exp. (4%).....	156,270.05	145.89	9,438.18	16,991.51	35,946.34	14,567.40	233,359.37	78,928.12	312,287.49
Grand Total (12%).....	$468,810.15	$437.71	$28,314.53	$50,974.54	$107,839.02	$43,702.18	$700,078.13	$236,784.34	$936,862.47

(a) Includes carrying charges on investment of the East River Gas Company which is devoted to the service of Consumers of the New Amsterdam Gas Co.

Property of Consolidated Gas Company Devoted to Use of Central and Northern Union Gas Companies

The carrying charges on certain facilities which are owned by the Consolidated Gas Company but devoted to the service of the consumers of the Central and Northern Union Gas Companies, in my opinion should be divided as heretofore between the Central and Northern Union Gas Companies upon the ratio of each Company's annual gas requirements to the combined annual requirements of both Companies.

The facilities so used together with the value thereof and the annual carrying charges thereon, are as follows:

Kingsbridge Holder and Accessories, Including Land

Estimated Cost of a 5,000 M. cu. ft. Holder and Accessories and Land for Same

Holder and Accessories	$522,500.00	@	11% per ann. =	$57,475.00
Land for Same	109,000.00	"	10½% " "	11,445.00
Total	631,500.00			68,920.00

Apportionment of Annual Carrying Charges on Kingsbridge Holder, etc. and Land

To provide for Return on Investment (8%)		
Holder, etc.	$41,800.00	
Land	8,720.00	$50,520.00
To provide for Taxes, Insurance and Retirement Expense		
Holder, etc. (3%)	15,675.00	
Land (2½%)	2,725.00	18,400.00
Total		$68,920.00
Total (Carried Forward)	$631,500.00	$68,920.00

Total (Brought Forward)	$631,500.00	$68,920.00
30" Transfer Mains in the Bronx—from Central Union Works to Kingsbridge Holder		
Estimated original cost thereof	$409,878.15 @ 12% per ann. =	$ 49,185.38
30" Transfer Mains in the Bronx from Locust Avenue and 134th Street to Central Union Works		
Estimated original cost thereof	17,609.25 @ 12% per ann. =	2,113.11
Total 30" Transfer Mains	427,487.40 " " " "	51,298.49

Apportionment of Annual Carrying Charge on 30" Transfer Main

To provide for Return on Investment (8%)	34,198.99
" " " Taxes, Mtce. and Repairs, Insurance & Retirement Expense (4%)	17,099.50
Total	$51,298.49

36" Distributing Mains in the Bronx from Kingsbridge Holder to Central Union and Northern Union Districts		
Estimated original cost thereof	295,625.00 @ 12% per ann. =	$35,475.00

Apportionment of Annual Carrying Charge on 36" Transfer Mains

To provide for Return on Investment (8%)	$23,650.00
" " " Taxes, Mtce. or Repairs, Insurance and Retirement Expense (4%)	11,825.00
Total	$35,475.00

Total Investment in these Facilities and the Annual Carrying Charges thereon	$1,354,612.40	$155,693.49

Apportionment of Annual Carrying Charges on these Facilities

To provide for Return on Investment (8%)		$108,368.99
" " " Taxes, Mtce. or Repairs, Insurance & Retirement Expense		
Holders & Access. (3%)	$15,675.00	
Land (2½%)	2,725.00	
Mains (4%)	28,924.50	47,324.50
Total		$155,693.49

Requirements of Central and Northern Union Gas Companies

The requirements of the Central Union and Northern Union Gas Companies, for the year 1922, as set forth on page 2 hereof, and the ratio of each to the combined requirements of both Companies which in my opinion should be the basis of division between them, for the year 1923, of this investment of $1,354,612.40 and the carrying charges thereon of $155,693.49, is as follows:

	Requirements	*Ratio*
Central Union Gas Company	3,165,076,000	56.764680%
Northern Union Gas Company	2,410,708,100	43.235320%
Total	5,575,784,100	100.000000%

A summary showing the division between these two companies of the investment in each of these facilities is as follows:

	Investment Devoted To the use Of both Companies	*Devoted to Use of Cent. Union Co. (56.764680% Of total Amount)*	*Devoted to Use of No. Union Co. (43.235320% Of total Amount)*
Kingsbridge Holder, etc., and Land			
Holder and Accessories	$522,500.00	$296,595.45	$225,904.55
Land	109,000.00	61,873.50	47,126.50
Total Kingsbridge	$631,500.00	$358,468.95	$273,031.05
30" Transfer Mains in the Bronx	427,487.40	242,661.85	184,825.55
36" Distributing Mains in the Bronx	295,625.00	167,810.59	127,814.41
Total	$1,354,612.40	$768,941.39	$585,671.01

A summary showing the annual carrying charges on the investment in facilities as divided in the foregoing between the Central Union and Northern Union Gas Companies, is as follows:

	Total Receivable By Consol.	*Payable by Central Union Gas Company*	*Payable by Northern Union Gas Co.*
KINGSBRIDGE HOLDER, ETC., AND LAND			
Holder and Accessories at 11%	$57,475.00	$32,625.50	$24,849.50
Land at 10½%	11,445.00	6,496.72	4,948.28
Total Kingsbridge	$68,920.00	$39,122.22	$29,797.78
30" TRANSFER MAINS IN THE BRONX AT 12%	51,298.49	29,119.42	22,179.07
36" DISTRIBUTING MAINS IN THE BRONX AT 12%	35,475.00	20,137.27	15,337.73
Total	$155,693.49	$88,378.91	$67,314.58
Apportionment of Annual Carrying Charges on these Facilities			
To provide for return on Investment (8%)			
Holder and Accessories	41,800.00	23,727.64	18,072.36
Land for Holder	8,720.00	4,949.88	3,770.12
30" Transfer Mains	34,198.99	19,412.94	14,786.05
36" Distributing Main	23,650.00	13,424.85	10,225.15
Total (8%)	108,368.99	61,515.31	46,853.68
To provide for Taxes, Mtce. or Repairs Insurance and Retirement Expense			
Land (2½%)	2,725.00	1,546.84	1,178.16
Holder and Accessories (3%)	15,675.00	8,897.86	6,777.14
30" Transfer Mains (4%)	17,099.50	9,706.48	7,393.02
36" Distributing Mains (4%)	11,825.00	6,712.42	5,112.58
Total (Taxes, Mtce. or Repairs, Insurance, etc.)	47,324.50	26,863.60	20,460.90
Grand Total	$155,693.49	$88,378.91	$67,314.58

Operations of Kingsbridge Holder

The operating cost of the Kingsbridge Holder, 60% of which is applicable to the Central Union and Northern Union Gas Companies should be divided between those Companies during the year 1923 on the basis of 57% and 43% respectively.

Central Union Company's 12" Connecting Main

As heretofore an adjustment between the Central Union Gas Company and the Standard Gas Light Company for use of a connecting main of the Central Union Gas Company, for supplying gas to the Standard Gas Light Company in the Boro of the Bronx, should be made, based upon the investment of the Central Union Gas Company in 6,130 feet of 12" main between its works and the mains of the Standard Gas Light Company at 138th Street and Lincoln Avenue, amounting to $20,872.85, for which the Central Union is entitled to a carrying charge computed at 12% per annum and amounting to $2,504.74 per annum.

The apportionment of the Annual Carrying Charge on this 12" Main, is as follows:

To provide for return on Investment (8%)	$1,669.83
" " " Taxes, Mtce. or Repairs, Ins. and Retirement Expense (4%)	834.91
Total	$2,505.74

Standard Gas Light Company's 62nd Street Governor and Boiler House and Accessories and Land

The investment of the Standard Gas Light Company on December 31, 1922, in its 62nd Street Governor and Boiler House and Land which are used jointly with the Consolidated Gas Company, as well as the carrying charges thereon, in my opinion should be divided between these two Companies during the first seven months of 1923 (to July 31st) on the basis of 3/13ths to Consolidated Gas Company and 10/13ths to the Standard Gas Light Company and for the balance of the year (from August 1st to December 31st, 1923) on the basis of 1/3rd to Consolidated Gas Company and 2/3rds to the Standard Gas Light Company; this division being based on the holder capacity operated at this station and owned by each Company; a change in holder capacity owned by each Company having taken place as of August 1st, 1923.

THE STANDARD GAS LIGHT COMPANY'S INVESTMENT IN THIS 62ND STREET PROPERTY AS DECEMBER 31,1922 AND THE ANNUAL CARRYING CHARGES, ARE AS FOLLOWS:

Governor & Boiler House & Accessories	$195,713.50	@ 11%	per ann. =	$ 21,528.49
Land	50,000.00	" 10½%	" "	5,250.00
Leasehold	30,125.00	" 8%	" "	2,410.00
Total	$275,838.50			$29,188.49

Apportionment of the Annual Carrying Charges on this Property

To provide for Return on Investment—8%

Governor & Boiler House & Accessories	$15,657.08
Land	4,000.00
Leasehold	2,410.00
Total	$22,067.08

To provide for Taxes, Insurance and Retirement Expense

Governor and Boiler House and Accessories (3%)	$5,871.41	
Land (2½%)	1,250.00	$7,121.41
Total		$29,188.49

THE DIVISION OF THIS INVESTMENT AND THE CARRYING CHARGES THEREON FOR THE SEVEN MONTHS ENDED JULY 31ST, 1923, ARE AS FOLLOWS:

DEVOTED TO USE OF

Consolidated Gas Co. (3/13ths)

Governor & Boiler House & Access.	$45,164.66	@ 11%	per ann. =	$2,898.07
Land	11,538.46	" 10½%	" "	706.73
Leasehold	6,951.92	" 8%	" "	324.42
Total	$63,655.04			$3,929.22

Apportionment of Carrying Charges applicable to 7 Months to July 31st

To provide for Return on Investment (8%)

Governor & Boiler House & Access.	$2,107.69	
Land	538.46	
Leasehold	324.42	$2,970.57

To provide for Taxes, Insurance and Retirement Expense

Governor & Blr. Ho. & Access. (3%)	$790.38	
Land (2½%)	168.27	958.65
Total		$3,929.22

Investment and Carrying Charges thereon for the seven months (Carried Forward)	$63,655.04	$3,929.22

Investment and Carrying Charges thereon for the seven months (Brought Forward)	$63,655.04			$3,929.22

DEVOTED TO THE USE OF

Standard Gas Light Co. (10/13ths)

Governor & Blr. House & Accessories	$150,548.84	@	11% per ann. =	$ 9,660.22
Land	38,461.54	"	10½% " "	2,355.77
Leasehold	23,173.08	"	8% " "	1,081.41
Total	$212,183.46			$13,097.40

Apportionment of Carrying Charges applicable to 7 Months to July 31st

To provide for Return on Investment (8%)

Governor & Boiler House & Access	$7,025.61	
Land	1,794.87	
Leasehold	1,081.41	9,901.89

To provide for Taxes, Insurance and Retirement Expense

Governor & Blr. House & Access (8%)	2,634.61	
Land (2½%)	560.90	3,195.51
Total		$13,097.40

Total Investment & Carrying Charges thereon 7 Months	$275,838.50	$17,026.62

THE DIVISION OF THIS INVESTMENT AND THE CARRYING CHARGES THEREON FOR THE FIVE MONTHS ENDING DECEMBER 31, 1923, ARE AS FOLLOWS:

DEVOTED TO USE OF

Consolidated Gas Co. (1/3rd)

Governor & Boiler House & Access	$65,237.83	@	11% per ann. =	$2,990.07
Land	16,666.67	"	10½% " "	729.17
Leasehold	10,041.67	"	8% " "	334.72
Total	$91,946.17			$4,053.96

Apportionment of Carrying Charges applicable to Five Months to December 31st

To provide for Return on Investment (8%)

Governor & Boiler House and Access	$2,174.60	
Land	555.56	
Leasehold	334.72	3,064.88

To provide for Taxes, Insurance and Retirement Expense

Governor & Boiler Ho. & Access. (3%)	$815.47	
Land (2½%)	173.61	989.08
Total		$4,053.96

Investment and Carrying Charges thereon for 5 Months (Carried Forward)	$91,946.17	$4,053.96

Investment and Carrying Charges thereon for 5 Mos. (Brought Forward)	$91,946.17			$4,053.96
DEVOTED TO USE OF				
Standard Gas Light Co. (2/3rds)				
Governor & Boiler House & Accessories	$130,475.67	@ 11%	per ann. =	$5,980.13
Land	33,333.33	" 10½%	" "	1,458.33
Leasehold	20,083.33	" 8%	" "	669.45
Total	183,892.33			8,107.91
Apportionment of Carrying Charges applicable to 5 Months to December 31st				
To provide for Return on Investment (8%)				
Governor & Blr. Ho. & Accessories		$4,349.18		
Land		1,111.11		
Leasehold		669.45		6,129.74
To provide for Taxes, Insurance and Retirement Expense				
Governor & Blr. House & Access. (3%)		$1,630.95		
Land (2½%)		347.22		1,978.17
Total				$8,107.91
Total Investment and Carrying Charges thereon for 5 Months	$275,838.50			$12,161.87
Total Investment & Annual Carrying Charges	$275,838.50			$29,188.49

SUMMARY OF CARRYING CHARGES FOR THE YEAR

APPLICABLE TO	*Seven Months to 7/31/23*	*Five Months to 12/31/23*	*Total*
Consolidated Gas Co.			
Governor & Boiler House & Access.	$2,898.07	$2,990.07	$5,888.14
Land	706.73	729.17	1,435.90
Leasehold	324.42	334.72	659.14
Total	$3,929.22	$4,053.96	$7,983.18
APPLICABLE TO			
Standard Gas Light Co.			
Governor & Boiler House & Access.	$9,660.22	$5,980.13	$15,640.35
Land	2,355.77	1,458.33	3,814.10
Leasehold	1,081.41	669.45	1,750.86
Total	$13,097.40	$8,107.91	$21,205.31
Total Charges	$17,026.62	$12,161.87	$29,188.49

Consolidated Gas Company's Small Mains in the Bronx

The carrying charge on the Investment of the Consolidated Gas Company in its small mains in the Bronx (comprising 6", 8" and 12" mains) all of which are devoted to the service of the consumers of the Central Union Gas Company, in my opinion for the year 1923 should be borne as heretofore by the Central Union Gas Co.

The investment in these mains and the annual carrying charge thereon is as follows—Investment, $42,756.61 @ 12% per annum = $5,130.79

Apportionment of Annual Carrying Charge on these mains

To provide for Return on Investment (8%)	$3,420.53
" " " Taxes, Mtce. or Repairs, Insurance and Retirement Expense (4%)	1,710.26
Total	$5,130.79

This report, and its acceptance by the parties thereto, should cover the existence of an arrangement whereby, the Northern Union Gas Company's distributing system and the Yonkers distributing system of the Westchester Lighting Company being connected by a main, running from the Kingsbridge Holder to the City of Yonkers, the reserve capacity of the Westchester Lighting Company of approximately 2,000,000 cubic feet of gas, is made available in an emergency for the requirements of the Northern Union Gas Company, and thereby to the system companies, and, similarly, a corresponding capacity is made available in an emergency for the Westchester Lighting Company. In accordance with this agreement gas will be exchanged between the Northern Union Company and the Westchester Lighting Company, as occasion may arise, at the average holder cost of the Westchester Lighting Company in the month in which gas is taken by either company from the other company. By this arrangement, the system companies, through the Northern Union Company, get the benefit in an emergency of the reserve capacity of the Westchester Lighting Company, in exchange for a readiness, on the part of the system companies under like circumstances, to furnish an equivalent capacity to that Company.

A summary for the year 1923 showing the investment of each of the System Companies in Manufacturing Capacity and Other Facilities which are devoted to the service of the consumers of other Gas Companies as divided and set forth on foregoing pages of this report, is as follows:

	Investment of other Companies devoted to the service of Consumers of the						
	Consolidated Gas Company	*Astoria Lt. Ht. & Power Co.*	*N.A.& E.R. Companies*	*Cent. Union Gas Company*	*No. Union Gas Company*	*Standard Gas Lt. Company*	*Total*
Property of the Consolidated Gas Co.							
48" Connecting Main	.....	$413.93	$192,869.76	$ 48,204.74	$101,979.37	$42,402.44	$385,870.24
Kingsbridge Holder & Accessories	.....	.....	.....	296,595.45	225,904.55	.....	522,500.00
" Land for Same	.....	.....	.....	61,873.50	47,125.50	.....	109,000.00
30" Transfer Mains	.....	.....	.....	242,661.85	184,825.55	.....	427,487.40
36" Distributing Mains	.....	.....	.....	167,810.59	127,814.41	.....	295,625.00
Small Bronx Mains	.....	.....	.....	42,756.61	.....	.....	42,756.61
Total	.....	413.93	192,869.76	859,902.74	687,650.38	42,402.44	1,783,239.25
Astoria Lt. Ht. & Pr. Co. Manufacturing Capacity							
Plant and Holders	$17,623,929.28	.....	.....	.....	2,876,582.21	1,494,338.47	21,994,849.96
Land for Same	3,011,043.74	.....	.....	.....	491,463.32	255,307.34	3,757,814.40
Working Capital	3,155,835.71	.....	.....	.....	515,096.31	267,584.29	3,938,516.31
Total	23,790,808.73	.....	.....	.....	3,883,141.84	2,017,230.10	29,691,180.67
New Amsterdam Gas Co. Manufacturing Capacity							
Plant and Holders	.....	.....	.....	860,861.14	363,512.16	.....	1,224,373.30
Land for Same	.....	.....	.....	197,323.25	83,322.85	.....	280,646.10
Materials and Supplies	.....	.....	.....	119,541.50	50,478.28	.....	170,019.78
Total	.....	.....	.....	1,177,725.89	497,313.29	.....	1,675,039.18
East River Gas Co. of L. I. City							
Astoria Tunnel	2,922,275.98	2,418.80	.....	281,686.65	595,921.27	247,780.66	4,050,083.36
Ravenswood or 71st St. Tunnel	395,121.31	327.05	.....	38,086.89	80,574.59	33,502.46	547,612.30
48" & 60" Mains on L. I	477,641.05	395.35	.....	46,041.20	97,402.32	40,499.33	661,979.25
Total	3,795,038.34	3,141.20	.....	365,814.74	773,898.18	321,782.45	5,259,674.91
Central Union Gas Co.							
12" Main	.....	.....	.....	.....	.....	20,872.85	20,872.85
Standard Gas Light Co.							
48" Harlem River Main	111,712.95	92.47	43,084.69	10,768.34	22,780.92	.....	188,439.37
62nd St. Gov. & Blr. Hse.(Avg. Invest.)	53,528.55	.....	.....	.....	.....	.....	53,528.55
" " Land for Same " "	13,675.24	.....	.....	.....	.....	.....	13,675.24
" " Leasehold " "	8,239.25	.....	.....	.....	.....	.....	8,239.25
Total	187,155.99	92.47	43,084.69	10,768.34	22,780.92	.....	263,882.41
Grand Total	$27,773,003.06	$3,647.60	$235,954.45	$2,414,211.71	$5,864,784.61	$2,402,287.84	$38,693,889.27

A summary showing the carrying charges for the year 1923 on the investment of each of the System Gas Companies, in Manufacturing Capacity and other Facilities which are devoted to the service of the consumers of other Gas Companies, as divided and set forth on foregoing pages of this report, is as follows:

Annual Carrying Charges on the Investment of other Gas Companies devoted to the services of Consumers of the

	Consolidated Gas Company	*Astoria Lt. Ht. & Pr. Co.*	*N.A.& E.R. Companies*	*Central Union Gas Company*	*Northern Union Gas Company*	*Standard Gas Lt. Company*	*Total*
Property of the Consolidated Gas Co.							
48" Connecting Main	$.....	$49.67	$23,144.37	$5,784.57	$12,237.53	$5,088.29	$46,304.43
Kingsbridge Holder & Accessories	.....	.....	.....	32,625.50	24,849.50	.....	57,475.00
Land for same	.....	.....	.....	6,496.72	4,948.28	.....	11,445.00
30" Transfer Mains	.....	.....	.....	29,119.42	22,179.07	.....	51,298.49
36" Distributing Mains	.....	.....	.....	20,137.27	15,337.73	.....	35,475.00
Small Bronx Mains	.....	.....	.....	5,130.79	.....	.....	5,130.79
Total	.....	49.67	23,144.37	99,294.27	79,552.11	5,088.29	207,128.71
Astoria Lt. Ht. & Pr. Co. Manufacturing Capacity							
Plant & Holders	1,938,632.22	.....	.....	.....	316,424.00	164,377.23	2,419,433.49
Land for Same	316,159.59	.....	.....	.....	51,603.65	26,807.27	394,570.51
Working Capital	252,466.86	.....	.....	.....	41,207.71	21,406.74	315,081.31
Total	2,507,258.67	.....	.....	.....	409,235.40	212,591.24	3,129,085.31
New Amsterdam Gas Co. Mfg. Capacity							
Plant & Holders	.....	.....	.....	94,694.72	39,986.34	.....	134,681.06
Land for Same	.....	.....	.....	20,718.94	8,748.90	.....	29,467.84
Materials & Supplies	.....	.....	.....	9,563.32	4,038.26	.....	13,601.58
Total	.....	.....	.....	124,976.98	52,773.50	.....	177,750.48
East River Gas Co. of L. I. City							
Astoria Tunnel	350,673.12	290.25	.....	33,802.40	71,510.55	29,733.68	486,010.00
Ravenswood or 71st St. Tunnel	47,414.56	39.25	.....	4,570.43	9,668.95	4,020.29	65,713.48
48" & 60" Mains on L. I	57,316.92	47.44	.....	5,524.94	11,688.28	4,859.92	79,437.50
Total	455,404.60	376.94	.....	43,897.77	92,867.78	38,613.89	631,160.98
Central Union Gas Co.							
12" Main	.....	.....	.....	.....	.....	2,504.74	2,504.74
Standard Gas Light Co.							
48" Harlem River Main	13,405.55	11.10	5,170.16	1,292.20	2,733.71	.....	22,612.72
62nd St. Gov. & Blr. House (7 Mos.)	2,898.07	.....	.....	.....	.....	.....	2,898.07
" " " " " " (5 Mos.)	2,990.07	.....	.....	.....	.....	.....	2,990.07
" " " Land for same (7 Mos.)	706.73	.....	.....	.....	.....	.....	706.73
" " " " " " (5 Mos.)	729.17	.....	.....	.....	.....	.....	729.17
" " Leasehold (7 Mos.)	324.42	.....	.....	.....	.....	.....	324.42
" " " (5 Mos.)	334.72	.....	.....	.....	.....	.....	334.72
Total	21,388.73	11.10	5,170.16	1,292.20	2,733.71	.....	30,595.90
Grand Total	$2,984,052.00	$437.71	$28,314.53	$269,461.22	$637,162.50	$258,798.16	$4,178,226.12

The proposed division of carrying charges as hereinbefore set forth, in my opinion should take effect, from January 1st, 1923. Charges for gas transferred from one Company to another during the year 1923, with the exception of gas transferred between the Northern Union and Westchester Lighting Companies, should be computed upon the basis indicated in my report for the year 1921.

Respectfully submitted,

GEO. E. WOODS

Dec. 18th, 1923. CHIEF ENGINEER

After examining and carefully considering the above report, the undersigned approve the recommendations and the basis upon which payments should be computed as set forth therein.

W. R. ADDICKS, Vice President—Consolidated Gas Company

C. G. M. THOMAS, Vice President—Consolidated Gas Company

R. A. CARTER, Controller—Astoria Lt. Ht. & Pr. Co.

LOUIS H. WERNER, Vice President—Central Union Gas Company

G. W. DOANE { President { New Amsterdam Gas Company / Northern Union Gas Company } / Vice President, East River Gas Co. of L. I. City }

W. GREELEY HOYT, President, Standard Gas Light Company

WM. J. CLARK, Vice President, Westchester Lighting Company

SCHEDULE "A"

ASTORIA LIGHT, HEAT & POWER COMPANY
STATEMENT OF ASSETS AS OF DECEMBER 31, 1923

	Total Assets as of Dec. 31, 1922	*Employed in its Gas Business*	*Not employed in its Gas Business*
Fixed Capital	$26,385,227.50	$25,769,744.29	(a)$615,483.21
Fire Insurance Participation Ctfs	297,218.56	.....	297,218.56
Materials and Supplies	1,930,690.42	1,930,690.42	.....
Residuals on Hand	177,395.18	177,395.18	.....
Cash	149,619.28	149,619.28	.....
Accounts Receivable & Advances to Affil. Cos.			
Consumers	19.55	19.55	.....
Barret Company	98,236.17	98,236.17	.....
Henry Bower Chemical Co	22,995.58	22,995.58	.....
Wentz & Company	112,202.48	112,202.48	.....
Metcalf and Shaw	2,433.81	2,433.81	.....
U. S. Government	1,588.19	.....	1,588.19
Affiliated Companies	1,466,111.43	1,466,111.43	.....
East River Gas Co. (Tunnel Advances)	5,000,000.00	.....	5,000,000.00
" " " " (Interest)	87,500.00	.....	87,500.00
Con. Gas Co.—Temporary Loan Recevable	7,200,000.00	.....	7,200,000.00
" " " —Interest	35,200.00	.....	35,200.00
Insurance Trustees	5,325.89	5,325.89	.....
Suspense Receivable	35,027.71	35,027.71	.....
Sundry Accts. Receivable	3,841.57	3,841.57	.....
Total	$43,010,633.32	$29,773,643.36	$13,236,989.96
Investment Employed in the Gas Business			
Plant, Holders and Accessories	$22,009,437.59		
Land (see Schedule "A-1" herewith)	3,760,306.70		
Working Capital (as above)			
Cash $ 149,619.28			
Materials & Supplies 1,930,690.42			
Residuals 177,395.18			
A/cs Receivable 1,746,194.19	4,003,899.07	29,773,643.36	
Deduct, The Excess of Working Capital Dec. 31, 1922 over the average amount employed during the 12 Months to 12/31/22 (per Schedule "A-2" herewith)	$4,003,899.07		
Average employed	3,941,128.45	62,770.62	
Investment upon which carrying charges for 1923 are based		$29,710,872.74	

(a) *Investment in Plant and Land at Lyster Creek, devoted to the Handling & Storage of Coal for N. Y. Edison Co.*

	Plant	*Land*	*Total*
Total Investment as of 12/31/22	$398,503.75	$524,721.07	$923,224.82
Devoted to Use of Astoria Co. 1/3rd	132,834.59	174,907.02	307,741.61
Balance (2/3rds) devoted to N.Y. Edison Co.	$265,669.16	$349,814.05	$615,483.21

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SCHEDULE "A-1"

ASTORIA LIGHT, HEAT & POWER COMPANY
LAND AS OF DECEMBER 31ST, 1922

Acquired prior to 12/31/908		
Land	$1,892,367.37	
Piers and Bulkheads	277,458.45	$2,169,825.82
Acquired since 12/31/908		
Land	1,446,039.40	
Assessments	32.53	1,446,071.93
Total		$3,615,899.75
Interest during Construction applicable to Land as shown in Schedule "A" in Joint Facility Report for the year 1921—		
p. 26—to March 1st, 1904	$164,490.90	
p. 27—March 1, 1904 to Dec. 31, 1906	243,499.51	
p. 28—Jan. 1, 1910 to Dec. 31, 1915		
Improvements to Real Estate	41,426.30	
Piers and Bulkheads	44,806.29	
No interest applicable to Land has been capitalized subsequent to December 31, 1915		
Total Interest applicable to Land		$494,223.00
Value of Land at Astoria as of Dec. 31, 1922		$4,110,120.75
Deduct, That portion of the Investment in Land at Lyster Creek, December 31, 1922, which subsequent to that date, was devoted to the handling and storage of coal for the New York Edison Co.		
Total value of Land devoted to handling and Storage of Coal.	$524,721.07	
Less, amount devoted to use of Astoria Co. (1/3rd)	174,907.02	
Balance (2/3rds) devoted to Use of N. Y. Edison Co		349,814.05
Land at Astoria employed in its Gas Business 12/31/22		$3,760,306.70

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SCHEDULE "A-2"

ASTORIA LIGHT, HEAT AND POWER COMPANY

STATEMENT OF WORKING CAPITAL TWELVE MONTHS ENDED DECEMBER 31ST, 1922

	January	*February*	*March*	*April*	*May*	*June*	*July*	*August*
Cash	$ 869,018.26	$ 234,960.66	$ 302,060.16	$ 771,282.10	$ 694,341.36	$ 659,332.44	$1,048,917.28	$1,038,574.82
Accounts Receivable	1,430,471.47	1,737,726.02	1,391,519.73	1,073,305.24	990,220.69	957,160.44	936,154.16	1,431,829.48
Materials & Supplies	2,325,614.33	2,353,249.58	2,388,437.42	2,303,154.41	2,132,075.09	1,893,013.49	1,647,224.30	1,440,212.77
Total	4,625,104.06	4,325,936.26	4,082,017.31	4,147,741.75	3,806,637.14	3,509,507.37	3,632,295.74	3,910,617.07
Deduct								
Bartlett Hayward	175,000.00	125,000.00	125,000.00	125,000.00	125,000.00	30,000.00	30,000.00	.....
Comstock	3,000.00	3,000.00	.....	.....	.....	.....	.....	.....
H. Steirs, Inc.	.....	.....	.....	.....	.....	.....	12,500.00	.....
U. S. Government	1,588.19	1,588.19	1,588.19	1,588.19	1,588.19	1,588.19	1,588.19	1,588.19
Total Deductions	179,588.19	129,588.19	126,588.19	126,588.19	126,588.19	31,588.19	94,088.19	1,588.19
Net Totals	4,445,515.87	4,196,348.07	3,955,429.12	4,021,153.56	3,680,048.95	3,477,919.18	3,538,207.55	3,909,028.88

	September	*October*	*November*	*December*	*Total*
Cash	88,126.34	121,482.57	248,048.22	149,619.28	6,215,764.49
Accounts Receivable	1,963,299.96	2,178,026.54	1,951,116.51	1,702,495.68	17,743,325.92
Materials & Supplies	1,690,801.80	1,946,682.83	1,964,457.59	2,108,085.60	24,183,009.21
Total	3,742,228.10	4,246,191.94	4,163,622.32	3,960,200.56	48,142,099.62
Deduct					
Robbin Belt Co	.....	13,000.00	13,000.00	.....	.....
U. S. Government	1,588.19	1,588.19	1,588.19	1,588.19	848,558.28
Total Deductions	1,588.19	14,588.19	14,588.19	1,588.19	848,558.28
Net Total	$3,740,639.91	$4,231,603.75	$4,139,034.13	$3,958,612.37	$47,293,541.34

Summary

	Average
January	4,445,515.87
February	4,196,348.07
March	3,955,429.12
April	4,021,153.56
May	3,680,048.95
June	3,477,919.18
July	3,538,207.55
August	3,909,028.88
September	3,740,639.91
October	4,231,603.75
November	4,139,034.13
December	3,958,612.37
Total	$47,293,541.34
	$3,941,128.45

SCHEDULE "B"

NEW AMSTERDAM GAS COMPANY

STATEMENT OF THE ESTIMATED VALUE (BASED UPON PRICES PREVAILING AS OF JANUARY 1, 1914) OF THE RAVENSWOOD PLANT AND EQUIPPED IN USE OCTOBER 1, 1919, PLUS NET ADDITIONS AT ACTUAL COST TO DECEMBER 31, 1922, INCLUDING VALUE OF LAND AND THE AVERAGE INVESTMENT DURING THE YEAR 1922 IN MATERIALS AND SUPPLIES FOR GAS MAKING PURPOSES

	Plant and Holders	*Land*	*Total*
Value of Plant & Land as of Oct. 1, 1919			
Land		$ 802,000.00	$ 802,000.00
Apparatus, Holders & Equipment	$2,333,088.00		2,333,088.00
Omissions & Contingencies	116,654.40		116,654.40
Buildings	594,448.92		594,448.92
Engineering & Contractors Profit	395,744.87		395,744.87
Administration	85,998.40		85,998.40
Taxes	12,204.00	20,394.00	32,598.00
Financing	211,366.46	52,601.53	263,967.99
Organization	201,902.29	50,246.23	252,148.52
Interest	314,379.13	136,359.40	450,738.53
Total as of October 1st, 1919	$4,265,786.47	$1,061,601.16	$5,327,387.63
Net Additions to Land & Plant since October 1, 1919 at Actual Cost			
3 Mos. to 12/31/19 as per Joint Facility Report 1922	$57,643.42		$ 57,643.42
Year 1920 as per Joint Facility Report 1922	174,793.01	$3,783.00	178,576.01
" 1921 "	157,175.86	3,123.05	160,298.91
" 1922 see Schedule "C" herewith	13,326.88	1,640.00	14,966.88
Total Net Addition to 12/31/22	$402,939.17	$8,546.05	$411,485.22
Total Investment in Land and Plant Dec. 31, 1922	$4,668,725.64	$1,070,147.21	$5,738,872.85

Investment as of the end of each Month in Materials & Supplies for Gas Making Purposes

January	1922	$711,650.55
February	"	741,988.15
March	"	735,573.96
April	"	702,682.49
May	"	685,681.66
June	"	654,069.10
July	"	641,375.00
August	"	606,642.11
September	"	572,307.19
October	"	599,180.69
November	"	587,195.54
December	"	541,395.47
Total		$7,779,741.91 ÷ 12 average of $ 648,311.83

Total Investment (incl. Plant and Equipment, Land and Materials and Supplies) $6,387,184.68

SCHEDULE "C"

NEW AMSTERDAM GAS COMPANY

NET INVESTMENT IN RAVENSWOOD PLANT—YEAR 1922

Fixed Capital, Since December 31, 1908

Accessory Equipment at Works		$19,160.11
Water Gas Sets and Accessories		10,183.24
Purification Apparatus		6,651.81
Furnaces, Boilers and Accessories		15,199.44
Gas Laboratory Equipment		1,820.74
Works and Station Structures		2,553.92
Steam Engines		1,231.11
Engineering and Superintendence		2,764.26
Improvements—Real Estate		1,640.00
Fixed Capital as of December 31, 1908		46,187.83
Tar Drainage	925.00	
Condensing Machinery	8,806.20	
General Connections	10,000.00	
Blast Machinery	26,457.65	
Total		$14,966.88
Land	$ 1,640.00	
Plant and Equipment	13,326.88	
Total	$14,966.88	

[fol. 1721] The methods or standards which have been used principally and generally for determining the quality of gas as commercially distributed and sold are as follows: Years ago the standard of test for gas that was used was candle-power and in more recent years, as gas is more largely used for heating purposes, a heating test is used as the standard. The candle-power standard was exemplified by the requirements of Chapter 125 of the Laws of 1906, and the more recent thermal unit requirement is exemplified by the Commission's order in Case No. 108. The heating standard is known as the British thermal unit standard. The B. t. u. has an energy which will raise one pound of water one degree Fahrenheit. There are many types of gas consuming appliances in the City of New York. I could not undertake to describe all of them, but they are practically all heating and cooking, most of the heating appliances and most of the cooking appliances are [fol. 1722] of the Bunsen burner type. There are a few types of heating appliances where they burn with a yellow flame. The Bunsen type is a mixture of a certain quantity of air before ignition. In other words, the Bunsen burner type is primary air and secondary air, the primary air being mixed at a point prior to the ignition of the gas, and the secondary air is that which combines with the gas and the surrounding atmospheres, using a complete combustion at the burner itself. The character of the flame in the combustion of gas depend primarily upon the amount of primary and secondary air used in producing that combustion and in the Bunsen burner there is produced a blue flame at the point of ignition and that is produced as a result of the mixture of air and gas before the point of ignition is reached. Primary air is the quantity of air introduced ino the gasway before the gas is ignited. The secondary air is the gas which goes into the flame from the surrounding atmosphere at the point of ignition and the characteristic of the Bunsen burner type is the introduction of the primary air at the point of ignition. Too little primary air in the Bunsen burner type of burner results depending upon the extent, in a yellow flame or a blue flame tinged with yellow; that is what is called a yellow tipped flame. Too much primary air in a Bunsen burner

type of gas burning device would result in what is known, generally speaking as a flash back; in other words, the flame flashes back into the mixing chamber and causes an explosion in the mixing chamber itself and results in the ignition of the gas at the jet where the primary air is introduced, that is, you get ignition back in the primary [fol. 1723] chamber tube itself, or you get what is called a flash-back. It is a pop or an explosion in this tube and ignition of the gas leaving the orifice at the ends of the tube. This flash-back may extinguish the flame altogether and simply let the gas flow without ignition. The concussion may put it out, and unless immediately reignited, the gas would escape into the room. The elements or compounds necessary in carburetted water gas in order to produce and deliver to the consumers a gas of not less than 650 b. t. u.'s per cubic foot are plain blue water gas which is made up of combustive elements of hydrogen and carbon monoxide, a cubic foot of such a gas has a heating value of about 300 b. t. u.'s and in order to increase that heating value it requires a mixture of some hydro-carbon compounds which would be saturated and unsaturated hydrocarbon compounds in order to bring the gas up to a 650 b. t. u. content. By an hydrocarbon compound I mean an hydrocarbon in gaseous form. It is a gas made up of hydrogen and carbon, depending on the particular kind of hydrocarbon. It would depend upon the relationship between the hydrogen and carbon content. The B. t. u. content under ordinary operating conditions of a cubic foot of coal gas under the average high temperature distil-ations is from 550 to 585 B. T. U.'s per cubic foot. The b. t. u. content of a cubic foot of coal gas depends upon the character of the coal and the amount that you get from a pound of coal that is, the yield of gas per pound. The percentage of inert gas would have an effect upon it. The range of b. t. u. content per cubic foot of coal gas would depend upon the heats that were carried, the character of [fol. 1724] the coal, the amount of inerts that were drawn in during the process of distillation. Of course, a b. t. u. gas of 500 might be made. With somewhat lower temperature you can get 600 b. t. u.'s. I would say for commercial operation 600 would be the limit in high tempera-

ture distillation. There are some operations which they call low temperature distillations, which are not generally used from which you would get a high b. t. u. content. For the manufacture of coal gas we use a high temperature distillation, and under those conditions 550 to 580 and 585 would be the average. In order to raise the b. t. u. content of any gas to not less than 600 b. t. u.'s per cubic foot, it would be necessary to add hydro-carbon gases; that would be necessary as to coal gas also. In order to produce a high caloriffe or b. t. u. content, the usual practice is to use a petroleum oil or a distillate from petroleum oil, usually in the form of gas oil. The hydrocarbons in gas, as I have referred to them, are both saturated and unsaturated compounds. The paraffin series is composed of the saturated compounds and the other series are unsaturated hydrocarbons. Unsaturated hydrocarbon compounds are less stable than a saturated compound. They are more subject to temperature and pressure conditions than the saturated hydrocarbons. They are less suitable for use in commercial gas. As to the relative heating value of the hydrocarbons added to the gas by the introduction of the gas oil as compared with the heating value of other compounds in the gas, the hydrocarbon gases, whether they be saturated or unsaturated, have a very much higher b. t. u. content per cubic foot than those that are in the water gas. The saturated hydrocarbon has the least b. t. u. content of any of the [fol. 1725] hydrocarbon compounds. They are more susceptible to these factors than the other compounds but they are less stable gases, both as to temperature and as to pressure. This susceptibility to temperature and pressure changes and the consequent unstability affects the distance to which the hydrocarbon compounds may be carried through the gas mains. The higher the b. t. u. content or the higher the hydrocarbon content in a gas, the greater the loss will be in b. t. u. content in transmission through the distributing mains of the system. Hydrocarbon compounds in the gases are really a vapor. They are not a fixed gas in any sense, they are vapors, and are capable of being carried along under certain temperatures and pressures. They all have a critical temperature, and that is the temperature of saturation. As soon as the temperature is such that the gas will not contain any more vapor, they are

immediately dissolved into a fog and drop out as a liquid and run into the drips; the drip being placed for the collection of liquids that form in the mains. Those are the hydrocarbon compounds which have the highest heating value per unit and when that takes place the consumers lose the benefit of something for which money has been expended in the raw material stage of manufacture and of course, it makes a very variable quality on the district reaching the consumer as the result of that, and also a gas of less b. t. u. content than has been manufactured. Hydrocarbon gases will carry for a less distance than any of the other elements entering into either water or coal gas. Cold or low temperature is one of the factors which you have to take into account in determining the suitability of gas for [fol. 1726] commercial distribution in New York City. As to the relative effect of the more extreme cold of winter in this climate upon the heating value of gas which contains large quantities of hydrocarbon compounds, as compared with the effect of the same temperatures in winter upon the gas containing less quantities of hydrocarbon compounds, the drop or the loss in b. t. u. content, both in percentage and in actual b. t. u.'s per cubic foot, will be infinitely less in operating or delivering a gas having the less amount of hydrocarbon gases. In other words, the plain blue water gas, which is hydrogen and carbon monoxide, can be delivered almost anywhere and under any conditions and still produce a gas of 300 b. t. u.'s. Now, the less amount of hydrocarbon gases put into that blue water gas, the less the loss is going to be on the district in delivering the product. There is some loss per unit of volume, in the b. t. u. content of such unit, between the point of manufacture and the point of consumption on the consumer's premises and that loss in number of b. t. u.'s per cubic foot between the point of manufacture and the point of consumption is small, in the case of the low calorific content gas and that loss increases both in percentage and in number of b. t. u.'s as you increase the calorific content by adding hydrocarbons. This situation as to the susceptibility of the hydrocarbon compounds to pressure and temperature produces a variable b. t. u. content depending upon the temperature and pressure. Inasmuch as the hydrocarbon vapors or gases are extremely sensitive to temperature and pressure, as the

temperature and pressure fluctuates either up or down, so the b. t. u. content will be affected. The greater the hydro- [fol. 1727] carbon content the greater that variation is going to be.

There is a definite relationship between the adjustment of burners in gas appliances and b. t. u. content. The lower the b. t. u. content of the gas the less primary air can be admitted into the chamber before the point of ignition, than would be the case with a gas of a higher b. t. u. content. Therefore, an appliance of any kind which is adjusted for 550 or 580, properly adjusted, would not have the proper adjustment for a gas of a much higher b. t. u. content. It is planned that appliances shall be adjusted for complete combustion. There is a very definite relationship between the b. t. u. content of gas and the amount of air required per cubic foot, of the mixture the final mixture, for complete combustion. Practically any and all gases will require a sufficient amount of air so that when complete combustion takes place the mixture will have had from 91 to 94 b. t. u.'s per cubic foot of the mixture. For instance, if you had a gas of 500 b. t. u.'s and you should add four times the amount of air, you would get something very close to 94 b. t. u's. in the mixture. In other words one part of gas to four parts of air. That would be about 100 or it would be somewhat more than 4, 4¼ or 4½, whatever the figure may be. But given a gas of 650 b. t. u.'s instead of putting in 4½ times the amount of air, you would have to put in, say 5½ times the amount of air in order to make that same 94 b. t. u's per cubic foot. So it is very definite, that the greater the quantity of b. t. u.'s in a gas, in direct proportion is required the additional amount of air to give complete combustion. That in turn requires a greater quantity of primary air in order to get a blue flame at the point of ignition.

By the Master:

It would require a greater amount of air and in order to get the air the appliance would have to be adjusted.

By Mr. Ransom:

If you had a gas of 550 b. t. u.'s to produce this 91 and [fol. 1728] 64 b. t. u.'s per cubic foot, it would require a

great deal more of primary air on the 650 b. t. u. basis. A variability of b. t. u. content means naturaly less efficiency in the appliance itself, because if the adjustment is proper for one it can not be for the other. Variability in b. t. u. content may be such as easily to result in incomplete combustion and it may be such as to produce a flash back. Burning in a primary air chamber or the extinguishing of the flame altogether would happen in the case of too much primary air, which would cause a flash back. Too much primary air of course, would result in a flash-back and therefore the burner itself would be unsuitable for the purpose intended as a heating burner. Too little air would result in a yellow-tipped flame, with the result of incomplete combustion, probably giving off some carbon monoxide and at the same time making a deposit upon the receptacle being heated, which, of course, is a result of incomplete combustion, and therefore at times dangerous and always uneconomical. Both life and health might be affected by such incomplete combustion and those conditions might be produced by the extent of variability in b. t. u. content. Of course, if there were a high b. t. u. content, and the ranges or appliances were adjusted to a high b. t. u. content, why then there would be no dangerous element attached to that. There would be a range, however, a variable range, as to the b. t. u. content on a high b. t. u. basis, because in order to maintain a high b. t. u. all over the district, every part of the district, you would have quite a range of b. t. u. content in the gas. In answer to the question with reference to a situation where a company was making and send [fol. 1729] ing out what during summer time conditions would be gas of not less than 650 b. t. u. on the district and all appliances were adjusted for the use of 650 b. t. u. gas and the situation, due to extreme cold, reduced the b. t. u. content far below that, conditions of variation such as I have described might come into being; that was assuming, that we were making 650 b. t. u. gas or slightly more at the works, at the point of distribution, and during the summer months; that that 650 would be pretty generally distributed throughout the territory and that the appliances would have been adjused to this 650 b. t. u. content. During the summer period I do not think that there would be a very

good loss in the delivery of the gas affecting the appliances to any great extent. The effect of pressure or cold weather, however, would immediately result, in the winter, assuming the maintenance of a 650 b. t. u. standard at or near the point of delivery, the people at or near the plant would have no material trouble with their appliances. The people on the outlying districts, I think, in some cases would have flash backs and all the appliances would have to be adjusted for the lower b. t. u. content, as a result of the dropping out from temperature and pressure. However, if you assumed the reverse of that, that we were to maintain 650 b. t. u. on the outlying district all the time and that they were adjusted to 650 b. t. u.'s during the summer, when the drop in b. t. u. was much greater, then in order to maintain a 650 b. t. u. content on the outlying district during the cold weather, or extreme cold, then the b. t. u. content at or near the point of delivery would be very much higher, in which case those appliances would have an insufficient [fol. 1730] amount of air and would be giving off carbon monoxide. There would be a possibility of giving off carbon monoxide under those conditions. The giving off of carbon monoxide would create danger to life and health in varying degree according to the conditions. Naturally, incomplete combustion would result in an inefficient operation. According to my observation and experience, there has not been uniformity in the conditions of temperature and atmospheric pressure in the City of New York. Temperature in the City of New York is seasonal, in other words, it may get down as low as zero degrees Fahrenheit in the real cold days of winter and as high as 90 degrees Fahrenheit in the hot days of summer. We have had it below zero in winter. As to variance in atmospheric pressure, that may or may not be of daily occurrence, that is the standard pressure at sea level is 30. However, that may vary within a week from 29 to 31. A variation from a minimum of 29 to a maximum of 31 inches of mercury represents the range of pressure conditions normally encountered here and under ordinary conditions you would say that the temperature variation was zero to 90 degrees Fahrenheit, possibly exceeding that, in either direction, under abnormal conditions. The variations in atmospheric

pressure occur from day to day. There is a standard of temperature and presure which is standard for use in determining the quantity and the quality of gas as manufactured. The standard conditions as to temperature and pressure are 60 degrees Fahrenheit and 30 inches of mercury pressure and those are generally used all over the world in determining both quantity and quality of gas. It is the practice to correct gas manufactured under any other condi- [fol. 1731] tions of temperature so as to show the quantity at that standard of temperature. The corrections are made at 30 inches of mercury and 60 degrees Fahrenheit. Whatever the temperature is that we may be putting gas through at our station meters is corrected to 60 and 30 inches of mercury. That is done at all our plants. There is not any way of correcting similarly the temperature of gas as it passes through consumers meters. This temperature based on 60 degrees Fahrenheit and a barometric pressure of 30 inches of mercury is taken as a standard because thirty inches at sea level is normal barometric pressure. That is, that is the average pressure at sea level. Sixty degrees temperature is assumed in many places as being about the temperature of the ground below the frost line. I should say the mean temperature in New York City and vicinity was somewhere about between 55 and 57. It varies from about 53 to 57. The average condition throughout the year if you were to strike an average or a mean would be around 55 or 56. A cubic foot of gas having 650 b. t. u. content at 30 inches barometric pressure and 60 degrees Fahrenheit would if tested without correction where the temperature was 80 and the barometric pressure 29—a cubic foot of this same gas would have about 600 b. t. u.'s. In other words, the volume would have increased to such an extent, as a result of a decrease in barometric pressure and an increase in temperature that a cubic foot of the gas would contain 50 b. t. u. less than if tested under the standard conditions of temperature and pressure, 60 and 30. Supposing I had 650 b. t. u.'s at 60 and 30, at 80 degrees Fahrenhiet and 30 inches of barom- [fol. 1732] etric pressure. We would have about 620. For every four degrees of temperature we have about 1 per cent variation. There would be five per cent less than 650

which would be—that would figure out 618,617. The effect of a difference of an inch in barometric pressure is about 3⅓ per cent. It would reduce it to about 630, from 650 b. t. u.'s so that combining the factors, if you have 650 b. t. u.'s at 60 and 30, then at 80 and 29 you would have very close to 600. Eliminating such conditions as I have described as standard, and assuming instead the normal conditions of operation and distribution that exist in the City of New York in my judgment it is not possible to determine the conditions of operation from day to day which should be provided for in the production and distribution of gas and the quantity of gas oil which it would be necessary to use in order to conform to the requirements of gas of not less than 650 b. t. u.'s per cubic foot, and a man's estimate might be wrong, depending entirely upon the conditions of the temperature throughout the year. We could, however, I think, assume that over the average of the year under the conditions which we know of as at this time, in order to maintain 650 b. t. u. on the district, we can approximate about the hydrocarbon content for the oil required in order to maintain that 650. The quantity of oil would vary substantially from day to day in the case of gas of not less than 650 and of course there would be a great variation from day to day, that is the dangerous part of the proposition, in that you have this large variation in the oil required, which in turn affects the b. t. u. content of the gas at or near the point of delivery, and the conditions of temperature and pressure affect and control the b. t. u. con- [fol. 1733] tent you would get from a given quantity of oil, as on the district. I could not say with certainty from day to day the extent to which conditions of temperature and pressure were affecting the hydrocarbons in the gases on the district until I knew what the conditions were going to be I could not tell that in advance and could not tell it with certainty even at the hour of manufacture. It is the temperature which causes the variability in the b. t. u. content at the outlying point, and it is the variability of the b. t. u. content which results in the variability of the oil used. In order to furnish gas of a standard of not less than 650 b. t. u. per cubic foot, it would be necessary for gas as sent out from the manufacturing plants to have a higher

b. t. u. content than 650. As to how much higher would depend entirely upon the atmospheric conditions. It would always be in excess of 650. It would probably be in excess of 700 that would be under conditions of cold weather. I have stated that in my opinion in order to conform to a minimum of — than 650 b. t. u. when sent out and on the district there would be times when it would be in excess of 700 b. t. u.'s per cubic foot at the point of manufacture. My best judgment at this time is that in order to deliver gas at the outlying points of not less than 650 b. t. u. it would require about 4.7 gallons of oil. If I had a piece of paper I could tell you what that would be. That figures about 674—674.9, average b. t. u. content that is tested under standard conditions of 60 and 30. My testimony with respect to the required b. t. u. content at the manufacturing plant, has been related to the situation of the plaintiff company. By "outlying parts of the district" I was referring to the Consolidated district itself. I could not say what is the greatest distance from the point of manufacture to the consumer on the district in the case of [fol. 1734] the Consolidated Company. From the Astoria plant to the Washington Heights section by pipe line is about 10.3 miles. By air line it is 4.6 miles. But if we want to consider the district as a whole, that is, a system, from the Astoria plant to the northerly end of the Northern Union District is something over 12 miles by pipe line and something over 8.4 miles by air line.

By the Master:

The Astoria plant is just a mile from the Bronx, whereas if we delivered that gas from 11th Street or 21st Street we could add two or three miles to that figure. From the Central Union plant it would be about a mile and an eighth less than that. From the nearest manufacturing plant of the system it would be about nine miles.

By Mr. Ransom:

With the supply of the upper part of Manhattan Island from the Astoria plant, gas ordinarily goes from the Astoria plant by the way of the tunnel to the Kingsbridge

holder and then across into the Washington Heights district. That is 10.3 miles.

By the Master:

The gas going through the Astoria tunnel to the northern section of Manhattan passes the Central Union plant but it does not go through the Central Union plant.

By Mr. Ransom:

It goes over through transfer mains past the Central Union plant. The Central Union is connected to the transfer system, but the gas coming from Astoria does not pass through the Central Union unless the Central Union requires more gas than they are making.

By the Master:

If they were putting gas into the transfer system, the gas from the Central Union would joint and mingle with the Astoria gas but this is the transfer system through which this gas travels and not the distributing system. It travels from the Astoria plant to the Kingsbridge holder in the transfer system and from there it goes into the dis- [fol. 1735] tributing system out on to the district. Assuming the gas is sent directly from the Astoria to the Kingsbridge holder, by pipe line it would be around six miles, I should say. Assuming the gas went directly to the Kingsbridge holder from Astoria, which is the nearest point aside from the Central Union, there would be no use of the gas by consumers during the transit, until it got to the Kingsbridge holder. There would be a loss of calorific content going directly that way from the Kingsbridge holder under the conditions you referred to. The temperature gas is maintained at in the holder varies. It depends on the temperature as it goes into the holder and how long it stays there. Of course, if you allow gas to remain in the holder an indefinite period of time, it would finally have the same temperature as the atmosphere. Just what those temperatures are I could not say. We have found them as low as 38 degrees in the holder itself.

By Mr. Ransom:

There would be a difference in the cost of producing a gas which were furnished to the consumers of the Consolidated Gas Company of New York of a quality not less than 650 B. t. u.'s per cubic foot and in producing a gas of the quality supplied by the Consolidated Gas Company for the year 1922 at the price of labor and materials paid by the Consolidated Gas Company as shown by the exhibits here in evidence. There also would be a difference between the cost of gas of not less than 650 B. t. u.'s and gas of the quality actually supplied by the Consolidated Gas Company during the year 1923. I have prepared schedules showing what would be the difference in the cost for each of these years. One relating only to the Consolidated Gas Com-
[fol. 1736] pany and one relating to the Consolidated Gas Company and the Astoria Light, Heat & Power Company, together, and I have prepared schedules for each of the years 1922 and 1923 on that basis to show the effect upon the cost of producing gas of a quality which would enable the delivery of 650 B. t. u. per cubic foot to the various parts of the distributing system as compared with the cost of producing gas of the quality actually supplied during each of the years 1922 and 1923 at the prices prevailing during those years. And these statements were made up on that basis. If I were asked the appropriate questions I would testify to each of the matters and things herein set forth as to the different elements of cost entering into such computations.

The statements referred to were as follows:

Consolidated Gas Company

The effect upon the cost of producing gas of a quality which will enable the delivery of 650 B. T. U.'s per cubic foot to all parts of its distributing system as compared with the cost of producing gas of a quality as supplied during the year ended December 31, 1922, at prices of labor and material paid during this period.

Gas Oil

To produce a gas of not less than 650 b. t. u.'s per cubic foot will require at least ..... 4.70 gals. per M

The oil required to produce the quality of gas as manufactured during the Year Ended December 31, 1922 was	4.06 gals. per M	
Excess of oil required to produce a gas of not less than 650 b. t. u.'s per cubic foot, as compared with the quality of gas as manufactured during the Year Ended December 31, 1922..	.64 "	" "
[fol. 1737] .64 gallon at $.057023 per gallon (the average price of oil for the Year 1922) =..	$.0365	per M
Tar and drip-oil credits:		
17½% of .64 gallon = .1120. .1120 gallon at $0.479 per gallon (the average price of Tar and Drip Oil for the Year 1922) =	$0054	" "
Net increase in cost of producing a gas of not less than 650 b. t. u.'s per cubic foot at all parts of its distributing system, as compared with the cost of producing gas of a quality as manufactured during the ended December 31, 1922..	$.0311	" "

(Note)—Calculations based upon the oil required during during the calendar year 1922—at the 11th Street, 21st Street, and 99th Street plants of the Consolidated Gas Company (11th Street four months).

Consolidated Gas Company

The effect upon the cost of producing gas of a quality which will enable the delivery of 650 b. t. u.'s per cubic foot to all parts of its distributing system as compared with the cost of producing gas of a quality as supplied during the year ended December 31, 1923 (about 597 b. t. u.'s) at prices of labor and material paid during this period.

Gas Oil

To produce a gas of not less than 650 b. t. u.'s per cubic foot will require at least	4.70 gals. per M	

The oil required to produce the quality of gas as manufactured during the year ended December 31, 1923, was	3.70 gals. per M	
Excess of oil required to produce a gas of not less than 650 b. t. u.'s per cu. ft. [fol. 1738] as compared with the quality of gas as manufactured during the year ended December 31, 1923 (about 597 b. t. u.'s)	1.00 gals. per M	
1.00 gallon at $.055150 per gallon (the average price of oil for the year 1923)	$.0552	per M
Tar and drip oil credits:		
17½% of 1.00 gallon = .1750 gallon. .1750 gallon at $.0483 per gallon (the average price of tar and drip oil for the year 1923) =	$.0085	" "
Net increase in cost of oil	$.0467	" "
To produce a gas of not less than 650 b. t. u.'s will require approximately .50 pound less Generator Fuel and .25 pound less boiler fuel per M cu. ft. than produce gas of a quality as manufactured during the year ended December 31, 1923.		
.50 pound generator fuel at $10.474 per gr. ton (average price of generator fuel for the year 1923) =	$.0023	" "
.25 pound boiler fuel at $7.837 per gr. ton (average price of boiler fuel for the year 1923) =	.0008	" "
Handling generator and boiler fuel:		
.75 pound at $.000376 per pound (the average charge for the year 1923)	$.0003	" "
Decrease in cost of generator and boiler fuel, including handling	.0034	" "
Net increase in cost of production of not less than 650 b. t. u. gas as compared with the quality manufactured during the year ended December 31, 1923 (about 597 b. t. u.'s)	$ 0433	" "

(Note.)—Calculations based upon the oil required during the calendar year—1923 at the 11th Street, 21st Street and 99 Street plants of the Consolidated Gas Co.

[fol. 1739] Consolidated Gas Company and the Astoria Light, Heat and Power Company

The effect upon the cost of producing gas of a quality which will enable the delivery of 650 B. T. U.'s per cubic foot to all parts of its distributing system as compared with the cost of producing gas of a quality as supplied during the year ended December 31, 1922, at prices of labor and material paid during this period.

Gas Oil

To produce a Mixed Gas of not less than 650 b. t. u.'s per cubic foot will require at least	4 11 gals. per M	
The Oil required to produce the quality of gas as manufactured during the year 1922 was	3 51 " " "	
Excess of Oil required to produce a Mixed Gas of not less than 650 B. T. U.'s per cu. ft. as compared with the quality as manufactured during the Year Ended December 31, 1922	60 " " "	
60 gallon at $.057378 per gallon (the average price of oil for the Year 1922) =		$ 0344 " M

Tar and Drip Oil Credits:

17½ % of .60 gallon Oil = .1050 gallons. .1050 gallon at $.0472 per gallon. (the average price of Tar and Drip Oil for the Year 1922) =		$ 0050 " "
Net Increase in Cost of Producing a Mixed Gas of not less than 650 B. T. U's per cu. ft. at all parts of its Distributing System, as compared with the Cost of Producing Gas of a Quality as manufactured during the Year Ended December 31, 1922		$ 0294 " "

(NOTE.)—Calculations based upon the production of 21% Coal and Gas and 79% Water Gas.

Calculations based upon the Oil required during the Calendar Year 1922 at the 21st Street, 99th Street and Astoria Plants and the 11th Street Plant for four months 1922.

[fol. 1740] Consolidated Gas Company and the Astoria Light, Heat & Power Co.

The effect upon the cost of producing gas of quality which will enable the delivery of 650 B. T. U.'s per cubic foot to all parts of its distributing system as compared with the cost of producing gas of a quality as supplied during the year ended December 31, 1923 (about 593 B. T. U.'s), at prices of labor and material paid during this period.

Gas Oil

To produce a Mixed Gas of not less than 650 B. T. U.'s per cubic foot will require at least	4 15 gals. per M	
The Oil required to produce the quality of gas as manufactured during the Year 1923 (about 593 B. T. U.'s) was	3 04 " " "	
Excess of Oil required to produce a mixed gas of not less than 650 B. T. U.'s per cubic foot, as compared with the quality of gas as manufactured during the Year 1923 (about 593 B. T. U.'s)	1 11 " " "	
1.11 gallons at $ 055256 per gallon (the average price of Oil for the year 1923) =		$ 0613 per M

Tar and Drip Oil Credits:

17½ % of 1.11 gallons Oil = .1943 gallon. .1943 gallon at $.0480 per gallon (the average price of Tar and Drip Oil for Year 1923) =		$ 0093 " "
Net Increase in Cost of Oil		$ 0520 " "

To produce a gas of not less than 650 B. T. U.'s per cubic foot, will require approximately .50 pound less Generator Fuel and .25 pound less Boiler Fuel per M. cubic feet Water Gas, than to produce a gas of a quality as manufactured during the Year Ended December 31, 1923 (about 593 B. T. U.'s.).

[fol. 1741] 81% of .50 pound = .41 pound Generator Fuel at $9.437 per gr. ton. (the average price of Generator Fuel for the Year 1923) =	$ 0017 per M
81% of .25 pound = .20 pound Boiler Fuel at $7.644 per gr. ton (the average price of Boiler Fuel for the Year 1923) =	0007 " "
Handling Generator and Boiler Fuel 81% of .75 pound = .61 pound at $.000209 per pound (the average charge for handling Generator and Boiler Fuel for the Year 1923) =	$ 0001 " "
Decrease in Cost of Generator and Boiler Fuel, including Handling	$ 0025 " "
Net Increase in Cost of Producing a Mixed Gas of not less than 650 B. T. U.'s per cubic foot, at all Parts of Its Distributing System, as Compared with the Cost of Producing Gas of a Quality as Manufactured during the Year ended December 31, 1923 (about 593 B. T. U.'s)	$ 0495 " "

Calculations based upon the production of 19% Coal Gas and 81% Water Gas. Calculations based upon the Oil required during the Calendar Year 1923 at the 11th Street, 21st Street, 99th Street and Astoria Plants.

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May 7, 1924.

[fol. 1742] GEORGE E. WOODS

Direct examination (continued)

By Mr. Ransom:

The b. t. u. content at or near the point of manufacture would be extremely variable if a b. t. u. content of 650 was maintained at the remote points of consumption. In cold weather, in order to maintain 650 b. t. u.'s in the remote points of the distributing system, it will be necessary probably to maintain not less than 700 b. t. u.'s at or near the point of manufacture or distribution. The result of that will be that the appliances at or near the point of manufacture or distribution will have a variable content, depending on the temperatures in turn of the air, from possibly 655 or 660 up to 700 or 710 a range of about 50 b. t. u.'s. That naturally will mean that during a large period of time the adjustment will not be such as to give the most efficient service. It would be possible sometimes to produce even a dangerous condition. Of course, I would not say as to all appliances that would be the case. The appliances, of course, would have to be adjusted for a very hard flame at or near the point of distribution or of manufacture at the low b. t. u. content of 650 or 655. Naturally, as the b. t. u. went up that flame would become softer and it would be a question as to just how much it would be affected, depending upon the adjustment and the increase in the b. t. u. content. That is true, absolutely with respect to substantially all appliances in the district near or not distant from the plants that inefficiency would result; and with respect to some appliances I feel quite sure there would be conditions of danger to life and health. Taking the other view [fol. 1743] of it, assuming 650 b. t. u.'s maintained within a mile of the plant, under conditions of cold, within a mile of the plant, that would mean that during the cold weather the outlying districts would be getting considerably less than 650 b. t. u.'s, with the result that they would have an excess of air and the service would be extremely bad. And then if you adjust for that particular condition during the time of cold weather, as soon as the weather conditions were such that you did not have the drop in b. t. u. content, they would

be out of adjustment for the other kind of gas that they would receive during the warmer weather. It would not make a particle of difference whether you were going to test at or near the plant or at a remote distance, so far as the service to the consumer is concerned in general, and the only difference will be—well, there will be no difference in so far as the service is concerned, but there will be an additional cost as the result of maintaining 650 b. t. u.'s in the remote ends of the district. Whichever way you treat it, from an operating point of view, 650 b. t. u.'s, would mean a less efficient service to a substantial number of consumers. I personally think that it is commercially impracticable. I think that there would be a great deal of trouble and a great deal of fault finding with our service if we undertook to make any such delivery of gas, and to an extent there would be an increase in the hazard to life and property.

By the Master:

I think in a good type of appliance an adjustment can be made of 100 b. t. u.'s. In other words, I think a good type of appliance can be regulated to burn gas properly at 500 and also burn gas properly at 600.

By Mr. Ransom:

I think many of the appliances of to-day would have to be changed and adjustments would have to be made, because [fol. 1744] they are not being made, the standard appliances to-day are not being made, for 700 b. t. u.'s gas. The average range of the commercial gases is between 500 and 600, and the appliances, are being built for a gas of that b. t. u. content. Between 500 and 600 it was possible, with respect to the better type of appliances to adjust for a range as broad as 100. That is, I do not mean that you can put them on the district, and that they would burn gas properly between 500 and 600, but they can be adjusted for a 500 gas or a 600 gas, or they would have a range of about 100.

By the Master:

Regarding the variation in the adjustment that the apparatus would permit, it would depend entirely upon the

adjustment. For instance, when we were making or got down to a 600 b. t. u. gas we made an adjustment with a very soft flame at 600. In other words, we had gone about to the limit at 600, so we could reduce to 550 in the hope that at 550 there would be no further adjustment. There would probably be many cases where, when we got to 550, as the result of the flash-back there would have to be an adjustment of the air ports on the primary shutter. That is to say, I would say that given a hard flame and going to the maximum—that is a soft flame which would be serviceable, but I would not want to go beyond that—it would be 550 b. t. u's. But if you should adjust it midway between those two points, with a fairly hard flame, then, of course, the variation would be only 25 either way.

By Mr. Ransom:

Between 500 and 600 b. t. u.'s you could adjust appliances of the better type so that they were adapted for gas anywhere between 500 and 600. I think that in the appliances on the district, the better type, just as we have now, as to gas from 650 b. t. u. upward, there is no question but that [fol. 1745] many spuds would have to be changed in order to reduce the quantity of gas. In other words, it requires one of two things in going up to a higher b. t. u. content; that is, to increase the air orifice or to reduce the gas orifice. Referring to 650 b. t. u. gas being produced—that is, gas being manufactured at the works which was of a content that enabled 650 b. t. u.'s to be sent to the more remote parts of the district under conditions of winter or cold the character of the gas at or near the point of manufacture would be unsuited to consumption in the type of heating and cooking appliances now commonly installed without some changes in some parts of the apparatus. That is there would be inefficiency unless there was an adjustment. Of course, that is, the adjustment that we have as of to-day would be unfitted entirely for a high b. t. u. gas. It naturally must follow that we would have inefficeney as to the parts of the district not far from the plant until there was some adjustment made. The question has been brought up at one time and another that gas of the high b. t. u. content, such as natural gas, has been and is being used and being used efficiently. In other words, natural gas has a b. t. u.

content of about anywhere from 950 to 1,000 b. t. u.'s per cubic foot. You can get ranges properly designed for a gas of 1,000 b. t. u.'s but natural gas is 1,000 b. t. u. every day. A burner of any type, if a burner could be designed to burn gas properly of any reasonable b. t. u. content, certainly up to a thousand, would do it, because it is being done; but the danger arises from the variable b. t. u. content being delivered. It is not a question of the high content if we maintain a constant b. t. u. in the gas. With respect to the area not far from the plant, [fol. 1746] if the appliances were thrown out of adjustment by the high b. t. u. content necessarily made in order to reach the outlying parts of the district during winter or cold weather and then we adjusted the appliances in the region near the plant, then when the warmer weather came permanently or intermittently, our appliances near the plant would still be again out of adjustment. I think then they would be unfittted for service at all; they would have to be readjusted. Because if you adjusted them properly for the high b. t. u. content, as soon as the content became lower at a point near the works, there would be a flash back in all of them and there would have to be a readjustment of the air shutter, so we would have in force frequent adjustments, almost constant. During the period of the winter load it would be up and down, depending on the weather conditions. The reasonable variation which there might be in the gas consistent with good service in the appliances of the type generally in use in the district of the Consolidated and its affiliated companies on the transfer system—I think for good service, whatever the standard may be, whether it is 550 or 600,—the maximum range of the b. t. u. content at any one point—would be five per cent either way from that point. In other words, if we are having 600, it should never go above 630, and it should never go less than 570. I think you will get that range and have the appliance adjusted at a medium flame, a medium mixture of air, at 600. In other words, that would be the maximum. The appliances have now been adjusted in our territory for a 550 b. t. u. content of gas, that is they would oper- [fol. 1747] ate best and most efficiently on about 550. That adjustment as it stands to-day produces a soft flame slightly tinged with yellow at the tip; that is, there is now an insuffi-

cient amount of primary air to produce a hard or sharp flame at the burner, and that adjustment was made so that when we reduce it to a lower b. t. u. content they would have the proper kind of flame, that is, you adjust it when you are producing gas of about 600. It would be my judgment to get a sharp, hard flame at the burner to the best advantage we would have to produce gas of about 550 under the present adjustment. The present flame is a little soft. Of course we are now operating at 580 and 585. This adjustment made in the way in which it has now been done, because we found from the actual tests that we made, bringing appliances of various kinds from the district and testing them, with the adjustment as it existed on the district, that to reduce the gas to anything less than about 600 b. t. u.'s would result in a flash-back in some of the appliances. I think we might have gone down to 590. In order to be safe, however, we assumed and believed that 600 was about the right kind and the proper quality of gas to send out prior to adjustments of any kind. That meant that until those adjustments were made practically all of the appliances were operating on a very hard flame. We immediately in these adjustments so regulated them as to make a soft flame with just a tinge of yellow at the tip, so that when we reduced the b. t. u. content it would then come down to a hard efficient flame. At the time that you made the adjustment of the appliances which is still in effect, we intended to reduce the b. t. u. content to 550 or less on monthly average; that is what we deemed it desirable and [fol. 1748] practicable to do under the Commission's order as a next step. Our thought was that it might be possible and we felt we would undertake to say whether or not we could go 550 or a little less without making any general readjustment of the appliances. The probabilities are that a great many of them would have to be adjusted at any rate; that is, if we would undertake to go below 550 on monthly average under the order which the Commission made in August of 1922 it was our judgment and experience that we probably would have to adjust at least some of the appliances further. There was not any doubt of that. I think it is both impracticable and highly undesirable to furnish gas of 600 b. t. u.'s or more per cubic foot without adjusting or readjusting the appliance, in that I think to in-

crease the b. t. u. content to any great extent above 600, with the present adjustment, is going to result in both inefficient service and danger to life and health. If we went above, say, 610 or thereabouts for any extended period of time without adjusting all of the appliances, the services under those conditions would be less efficient. My own personal opinion is that there would be both loss of health and life under conditions of operating for a continuous period of time on a high b. t. u. content of not less than 615 b. t. u.'s with the present adjustments. This 610 or 615 would be a safe upper limit under the present adjustments, for any extended period of time. Anything beyond that, for an extended period of time in many cases—that is, as to many appliances—would be dangerous. There would be many appliances, perhaps a thousand in the million that we have. If you undertook to give, for [fol. 1749] example, gas of 620 b. t. u.'s or more it would result in an incomplete combustion. In so far as the efficiency is concerned, it would be the result of the carbon content on the receptacle being overheated, coming into contact with the surface, and that of course would mean that the efficiency from the gas—the b. t. u. content—it would not be efficiently used. That would occur because some heating value of the gas had not been used. The danger to life and health would be due to the fact that, due to this incomplete combustion, carbon monoxide is given off, which is extremely poisonous to the human system. Carbon monoxide would be given off in dangerous quantites from some types of appliances if we were giving gas of 620 or more b. t. u.'s without adjustment. As to the effect of the product of a gas of a normal content of 665 or 670 b. t. u.'s on the present operating efficiency of our plants, I think that the experience we have had, our oil efficiency would be less in operating on a high b. t. u. content—that is, in an effort to vaporize or gasify the quantity of oil required per thousand cubic feet, the efficiency would be less than 100,000 b. t. u.'s per gallon. My personal belief is that, under those conditions, it would not be over 90,000 b. t. u.'s per gallon. If we were making 665 b. t. u.'s in our plant, we would get less b. t. u.'s per gallon of oil than we are getting from gas of the quality used or now manufactured in the operation at the plant and, in addition to that,

of course, you would get the increased drop out or a decrease as a result of having that increased hydrocarbon vapor in the gas. The company's production of gas on that slight b. t. u. content would give less operating efficiency as compared with operations under the quality of gas we are now supplying under the order of this Court.

[fol. 1750] I am personally familiar with what was done by the plaintiff company as well as by the other gas companies, whose manufacture and distribution is in our charge, with respect to carrying out the terms of the order of the Commission in Case No. 108. I personally visited all of the plants of the different companies at that time and I saw what was being done in the actual operation of the plant. I personally conferred from time to time with many of the heads of the departments having supervision over the installation and the care of gas appliances, and gave them instructions as to what I thought should be done in the carrying out of the plans in compliance with the order of the Commission. Many conferences were held. The Commission specifically stated that whatever was done should be done with the least inconvenience to the public, which of course was our own wish, because we desired to give service without having trouble. Before that, with respect to selecting typical appliances from the district and having them tested to see what was the range of adjustments; what we actually did first was to decide as to the method providing the least inconvenience to the consumer. There was a conference called with respect to the situation. Some representative of every gas company in the City of New York was present at one or two conferences, and I also discussed the matter with the Public Service Commission. There was a conference held with the gas engineer of the Commission and other representatives from the Commission. The first thought of both ourselves and the Commission was to do whatever was necessary to be done with the least inconvenience to the public. After that appliances were brought in and tested, which I stated a few moments ago, [fol. 1751] to determine as to what b. t. u. content we could make them without disturbing the appliances as already existed on the district; that is, I proposed that the first step was to determine how much we could reduce our b. t. u.

without adjusting the appliances. Then the attention was called to the Commision that this was what we found from our experiments and tests of the appliances on the district, that we could safely without inconvenience to the public in any way produce a gas of about 600 b. t. u.'s as an initial step. Many appliances were brought in from the district—hundreds I should say, under our supervision, and so we determined that 600 b. t. u.'s was the minimum, or approximately that, before an adjustment was made. Then then conference resulted, after discussion with the engineers and with the Commission's engineers that we would—what we had been doing—train a gang of men for the purpose of making the necessary adjustments, and these men were instructed for a period of time, about three months, I should say, after which time they were sent out on the district, and it was agreed upon to make the adjustments and clean out the burners and orifices and put all the appliances in good shape and bring the appliances adjusted to a soft flame, so that when the further reduction in b. t. u. content was made, there would be no question as to the service that was being given and no trouble to the consumer. After it had been determined in the manner that I have described, that we could reduce our b. t. u. content to about 600 b. t. u. without disturbing the efficiency of the appliances as then in use, the Consolidated Gas Company and the other companies on the transfer system reduced their output so as to [fol. 1752] produce gas of about that b. t. u. content, and that was done under my direction. That was for a period of about six months, beginning in October, 1922. The order being specified to become effective in that month. The organization of this force of men and its instruction was carried out under my direction with Mr. Rasch directly in charge but responsible to me. After we had gotten these men organized as a staff and instructed as to what they should do and how to do it, they looked at every appliance upon the district, examined it, cleaned the burners and orifices when necessary and made an adjustment of the primary air shutter, which produced a soft Bunsen flame—that is, a flame with a slight tinge of yellow at the tip—just off the yellow, I should say—it was a soft flame which would produce and give good service, but not as efficient

as a harder flame which would be produced when the b. t. u. content was lowered at a later date. That is, it is my judgment that a slightly more efficient service would be rendered if the companies were permitted to go to the 550 b. t. u. monthly average which had been contemplated under the Commission's order and it was the result of that, as soon as the air adjustments were made, we dropped from 600 down to about 580, and are giving efficient service. I should say what we are giving now averages between 580 and 585. That reduction to 580 or 585 on the monthly average was not until the adjustments had been entirely completed in the field or on the district by this staff of men. So far as the plaintiff and its affiliated gas companies are concerned, my best recollection of the time when the adjustments were completed is about the middle of April, 1923. [fol. 1753] That was as to the Consolidated Gas Company, somewhere between the 1st and 15th of April, I think. The proper proportion of air and gas in the mixing chamber in this type of Bunsen burner on gas appliances depends somewhat on the character of the gas—that is, coal gas and water gas, there is a little difference between them; but I should say that, for practical purposes, 200 b. t. u.'s per cubic foot, that is enough primary air should be introduced into the mixing chamber to give a mixture of about 400 b. t. u.'s per cubic foot of mixture at the burner at the point of ignition. Suppose you have anything less than approximately 200 b. t. u.'s per cubic foot of mixture at the burner, there is a probability of a flash back from the burner itself and the ignition of gas in the primary chamber tube at the point of ignition to the primary chamber tube; and this mixture of air and gas, so as to produce not less than 200 b. t. u.'s per cubic foot of the mixture should take place before reaching the burner. Now, if the air taken into the mixing chamber dilutes the gas so as to produce a mixture of less than 200 b. t. u. per cubic foot of the mixture, the flash back and explosion takes place in the mixing chamber and the ignition of gas in the mixing chamber takes place at the orifice where the gas enters the mixing chamber. That will produce a yellow flame and will be totally unfitted for the purposes intended. It would not be at all suitable for cooking and heating. Under some con-

ditions of operation a yellow flame produce carbon and a deposit of carbon; if it comes in contact with any cool surface of any kind. When that happens immediately the flame temperature is reduced to such an extent that the carbon from the gas is deposited on the receptacle which, [fol. 1754] if it burns slowly, gives off carbon monoxide. The effect upon this soft flame as to the number of b. t. u.'s reduced below 600 b. t. u.'s is to harden the flame and give a medium flame as you go downwards 550; but it takes away the yellow part of the flame and it shortens the flame and that indicates a greater quantity of primary air in the mixing tube. The decrease in b. t. u.'s would tend to harden the flame; that is, with the gas as we are now producing at 585 b. t. u.'s on the monthly average, a medium flame is produced. It is neither a hard flame nor a soft flame; it might be called medium soft. If we now sought to deliver gas of not less than 650 b. t. u. per cubic foot there would have to be an increase in the amount of primary air. All of the appliances would have to be adjusted. All of them could not be adjusted for safe operation without making some changes on many of them; that is, I distinguish between changes and adjustments, I mean actually putting in new parts. A good type of appliance is capable of adjustment between 500 and 600 b. t. u.'s. The mixing chamber and the position of the burners on many of appliances produced by manufacturers for any more than 650 b. t. u.'s be adjusted or reconstructed so as to furnish a sufficient quantity of air for a gas containing lots less than 650 b. t. u.'s or more. When I say "Adjusted" there are probably some that could be adjusted and others that would require the installation of a different spud and reducing the quantity of gas before giving the same quantity of the air that they have at the present time where the air shutter does not permit of the same quantity of air. I believe there are some that could be readjusted. The general situation would be that they would have to be, to some ex- [fol. 1755] tent, reconstructed. What extent that would be I am not prepared to say. I think, in most of the cases, for instance, it would require a new spud. I think in other cases, for instance, in some types of ranges it would

require additional secondary air. That would require some additional reconstruction, and the putting in of a new spud. The cost of reconstruction would be as much as the cost of the original appliance, I should imagine in some cases. I have in mind types of appliances as to which that might be the situation; that in many cases or in some cases it would be cheaper to replace than to try to reconstruct. It would take considerably more time to adjust appliances for a higher b. t. u. gas than for a lower b. t. u. gas. It is more difficult and more expensive because in reducing from a high to a low b. t. u. content it is necessary to do either one of two things or both, that is decrease the quantity of primary air or increase the gas orifice itself. Having increased the gas orifice in order to put the appliance in shape for a lower b. t. u. content, in endeavoring to go from a low to a high, it requires the opening of the air port. The primary air, or a decrease in the size of the gas orifice itself, or both. Of course, it is comparatively easy to increase the size of the gas orifice by taking a reamer and regulating the size. Having gotten that size, however, it is extremely difficult to reduce it again. In other words, the only way it is possible to reduce it is to remove the spud or orifice and put in a new one. When you go from a high to a low b. t. u. content you take a reamer to increase the size of the gasway opening. That is the way in which it is most commonly done. When you are seeking to go or are compelled to go from a low to a high b. t. u. [fol. 1756] content of gas, you can do one of two things. You can increase the air sufficiently to take care of the amount of gas going in and if that is not possible you must increase the size of the air orifice itself. Unless you are able to change the position of the burners and the primary air chamber, it is generally necessary to deal with the situation by decreasing the size of the gasway opening, so that, unless you reconstruct in the other respects, you are confronted with the necessity of making smaller a hole which has been made larger. In the case of a type of orifice where there is a spud you have to put in a new spud. There are many types of appliances on which there is no removable spud. Then you have to remove a part of the cock or install a new cock or rebuild the primary chamber. It

would be a pretty difficult matter to rebuild the primary chamber, so as a practical matter, you have to put in a new spud and reconstruct by putting in a new cock and, of course, that takes more time than making an adjustment by the other way. The time required for adjusting, given an ordinary gas orifice, from a high to a low b. t. u. content would be about 2½ times as much to adjust from a low to a high as it would from a high to a low. The matter of reaming out a spud to change from a high to a low only takes a few minutes.

As to the proximity of a receptacle to the flame on the top burner of a cooking stove affecting the flame and the results produced by it, a short flame of course, with the sufficient amount of primary air, can just impinge against the receptacle without the production of hydrocarbon or carbon monoxide. An elongated flame under said conditions does either one of two things, or both; it deposits carbon on the bottom of the receptacle or, if the flame is of sufficient [fol. 1757] length where it envelopes the outside of the receptacle, it will, under those conditions, give off carbon-monoxide. If you put the receptacle too close to the flame, incomplete combustion may be the result of the contact, in many cases. That would depend upon the adjustment and the character of the flame. Aside from that factor, it is desirable that the flame of the top burner should be as near the flame as is possible without producing incomplete combustion. An insufficient amount of primary air will elongate the flame, and if you elongate the flame, then the flame impinges to a greater extent upon the receptacle on the top of the burner. That will increase the carbon deposited on the receptable being heated. It is that kind of situation, namely, the elongation of the flame as a result of too little primary air, that produces the giving off of carbon monoxide so that carbon monoxide is produced under the use of a receptacle on the top burner of a stove under these conditions. We found in our experiments, in taking appliances from the district under the present adjustment and burning the gas for about 670 b. t. u.'s—some appliances that gave off little or no carbon monoxide. The majority of them gave off about two-tenths of one per cent. The highest that we found I think, was four per cent and so the range is from about two-tenths of one per cent

to four per cent. The amount of carbon monoxide produced and given off, depends on the type and construction of the particular appliance and the adjustment. Giving off of four per cent of carbon monoxide would be highly dangerous. When it goes up to four per cent it is extremely dangerous. The extent of carbon monoxide given out on appliances under a proper adjustment is practically nothing. I do not believe you can find in a test. The gas ap- [fol. 1758] pliances on the district and in practical use under proper adjustment give off no appreciable quantity at all. In the case of an oven of a closed type, or a furnace in which gas is burned, as to the practical effect of adding b. t. u. content so far as the operation of ovens or gas burning furnaces is concerned, ovens are somewhat different from the open top burners in that from an open top burner the secondary air comes in from the surrounding atmosphere surrounding the burner, whereas in the type of oven in order to get a proper efficiency of the burner the secondary air is also restricted. In other words, they have openings which will permit a certain amount of air to go into the oven to produce proper combustion. With respect to ovens and furnaces and that type of combustion of gas, the primary air mixture produced in generally the same way as with respect to the burners on the top of a stove. There is a definite restriction and adjustment with respect to the secondary air, so with respect to that type of gas burning devices you have to take into account an adjustment on secondary as well as primary air. Appliances in general are designed for use with a gas containing from 500 to 600 b. t. u.'s if adjusted therefor. As to ovens, that statement applies to both the primary and the secondary air admission, generally speaking although, of course, we have many types of appliances of our own construction that would efficiently operate at higher than 600 b. t. u.'s. The present adjustment of our ovens and our present quality of gas of 580 b. t. u.'s produces a medium flame on the surface of the oven itself. It would neither be a hard flame nor a soft one. Supposing we took that same adjustment and as to ovens and furnaces and that type of gas burning devices [fol. 1759] where the secondary as well as the primary air is adjusted, the effect if we started to give gas above 650 b. t. u.; for example, 660 to 670. There would be an im-

mediate elongation of the flame, producing the yellow flame which would deposit carbon in the oven itself, and you would get the deposit of carbon for two reasons; first, the primary would be insufficient and there would be insufficient secondary air coming in to properly consume the gas coming over. Carbon monoxide would be given off at the same time. If the door of the range or of the gas burning furnace were opened, there would be a puff out. Under those conditions the flame, rather a lazy, floating sort of a flame right on the upper surface of the oven, apparently as a result of an insufficient amount of both primary and secondary, the door being opened, the air would enter, and an immediate puff of flame comes out through the open door, that is, the opening of the door makes up the deficiency of the secondary air. That produces an immediate accentuation of combustion which projects the flame through the door of the oven or furnace. Under those conditions I think it is very probable that any persons who were in proximity to the door would have not only their hands but probably their clothing, their faces burned. That is based upon the supplying of 660 or 670 b. t. u. gas with our present adjustment of appliances.

It would depend upon the type of appliance as to how much the design should be changed. There would have to be changes made in the appliance. Whether the design would have to be changed—it certainly would have to be enlarged; but there would have to be changes made in the appliance in some that might call for designing a new part [fol. 1760] in order to meet that requirement. I think surely, in some instances the adjustments could be made; with the better type of appliances I think it could be dealt with by adjustment. Our company is not able with respect to consumption of gas on the district to control or insure the use of appliances of the better or more modern type and we have to deal with conditions with a wide range of quality and type of appliance. I could only make a guess, with respect to ovens and furnaces and the like what percentage of those which could be adjusted and those to be reconstructed or discarded. There would be a very large percentage of them. There would have to be some modifications made and just what those would be I cannot say. The combustible elements or compounds in water gas are hydro-

gen, carbon monoxide and the hydrocarbons. In coal gas the elements or compounds are the same but in different proportions. Complete combustion results in water vapor and carbon dioxide. The hydrogen content combines with the oxygen of the air and produces water in the form of vapor. The oxygen from the air combines with the carbon and with complete combustion forms dioxide, which is CO^2. Incomplete combustion is carbon monoxide. There is an insufficient amount of air or an insufficient amount of oxygen to convert it into carbon dioxide. Water vapor in itself as thus produced is not deleterious to health neither is carbon dioxide as thus produced deleterious to health. Carbon dioxide is not deleterious to health unless it is in such large volume that it reduces the amount of oxygen in the air and what we exhale from our lungs is carbon dioxide. The combustion of any carbon compound is carbon dioxide. It is [fol. 1761] not dangerous or deleterious except as it may prevent the presence of a proper amount of oxygen and it acts as a dilutent and of course the percentage of that would be reduce the oxygen content. Carbon monoxide has a deleterious effect for it has a toxic effect upon the human system and also affects the blood vessels and the blood corpuscles. It is lack of air for combustion that caused carbon monoxide to be thrown off. From our knowledge of gas combustion, our observation from tests and our experience in the gas industry, it is my opinion that the appliances as now adjusted and on the district, subjected to a gas containing not less than 650 b. t. u.'s per cubic foot would be dangerous to health. I would hate to think how much it would be. Under the conditions of the uses of appliances where secondary air is restricted and where primary adjustment for the purpose of obtaining the efficient use of the appliances is for gas of 550 b. t. u. or less, the burners would not have the required amount of air if 650 b. t. u. gas or gas of a higher b. t. u. were introduced.

Referring to the conditions which in the case of any closed burners, such as ovens or furnaces, would develop, as resulting in the coming forth of a flame and the dangers of burning the persons who were in proximity to the door, the dangers that I have described as attending such an appliance under those conditions would be likely to be something of immediate and instantaneous development. That

condition would probably be the result of a slow development. In an oven burner that had an insufficient amount of air, both primary and secondary, it would be of short duration for that condition to be brought about. However, there would be other conditions where the deposition of [fol. 1762] carbon on the burner itself would result in extending the condition—in other words, it would be cumulative in that effect before it would result in the bursting out of the flame on the opening of the door. You get both an instantaneous and a cumulative effect as the result of too little air for the proper combustion of the gas. Any danger from giving off of carbon monoxide as an instance of incomplete combustion would be continuous and cumulative, that is, even if there were a small amount of carbon monoxide given off from day to day, it would gradually impair the health of anyone that was in there, but this deposit of soot or lamp black, as it is sometimes called in other situations, tends or may it tend to close up the orifices of burners. Then there is danger of unconsumed gases passing those openings instead of there being a combustion at the openings, that tends to increase the danger of explosion or the amount of combustible gas which is available for ignition when the door is open and the added quantity of secondary air rushes in, so that you have a situation where burners that have been partially or completely closed by this soot or carbon give off gas without ignition.

In the reserve capacity of a company such as ours there must be some variation. We cannot maintain a constant reserve. It is my judgment that when we have reached a reserve capacity—that is, when our reserve has been reduced to 20 per cent that we should immediately commence construction. I am assuming that the construction would require a period of two years time and that such construction should be of such magnitude that it would give us a reserve of 25 per cent when the construction was completed. [fol. 1763] During that period, however, we would have started at a 20 per cent reserve, requiring two years in which to build that to a 25 per cent reserve; but before the new plant was in operation our reserve might have dropped as low as 12 per cent. There might be abnormal conditions whereby the reserve might be less than that or there might

be a sub-normal condition where in anticipating your 25 per cent reserve two years hence, you might have 26 or 27; in other words, your increase has not been quite as much as you had expected. For construction of our most advantageous unit of coal gas or water gas we should have a period of two years for construction; completion less than that is completion and work under pressure. There have been instances in which we have had to drive through to completion in less time. The size of the units would depend largely on whether it was coal or water gas. If it were coal gas, it would probably be in units of about 15,000,000 cubic feet. In water gas, about 36,000,000. It might be that we would probably have a unit of 36,000,000 of water gas. It might be that we would complete part of it, but only put in 15,000,000 of generating capacity, holding the balance possibly for next year. It would depend on just what the conditions were as of that time; but the plant would be laid out as a unit of about 36,000,000 water gas. That is, at the present time and on the basis of my experience the advantageous units of coal gas construction are 15,000,000 cubic feet of working capacity per day. I do not think I would want it any larger than that, and for water gas construction my similar unit is 36,000,000 per day, but with a possibility, under necessity of only putting half of that through to immediate completion. If we felt [fol. 1764] that we did not require the full amount of generating capacity, we might go ahead and design and lay out and build such buildings as were to be used for 36,000,000 plant, but only put in 15,000,000 of apparatus until such time as the other apparatus was needed. I feel that when we have reached 20 then it is the time to consider the installation of whatever we feel should go in as of that particular time, which we require two years of time to do, that is, the time to start to build, on the work. In other words, at 20 per cent, that within two years we will have another plant in operation which will bring our reserve back to 25 per cent and when we do start construction, it is our objective that we should restore our reserve to not less than 25. Assuming we build these new units and restore our reserve, we can map out a program for 15 or 20 years, but of course, it is subject to change depending upon conditions. Our surplus varies as our demand may change.

We may have over-estimated or under-estimated; in the first place, we can base it and have based it upon a broad general program based upon the last twenty years' experience. We have also taken into consideration the last ten years and the last seven years; that is, based upon the actual maximum day's requirements. Those maximum days may be accentuated by a larger use of gas for fuel, in which case, of course, our curve will be radically different from the one we have laid out. We have also worked it out—I personally have—as to the increase in population based upon the last 20 years, adding the increase in per cent as compared with the last twenty years, assuming an increase in the consumption per meter or per capita based upon the past experience, and arrived at almost the same figure that we have by taking our maximum day and [fol. 1765] establishing a curve from that. We can, based upon past experience, assume that we expect to do a certain amount of business within the next 15 or 20 years and naturally should be prepared to take care of that business. I personally think that what we have looked up is rather low than high. I think it would be our minimum requirements, however, it is only time that can tell whether or not we are sound.

By the Master:

There will be a development of both, in my judgment, in the next 15 or 16 years, so that Astoria will have double its capacity or more and Hunts Point will have as much or more than Astoria has today.

[fol. 1766] May 8, 1924.

George E. Woods resumed the stand.

Direction examination (continued) by Mr. Ransom:

In my judgment it is necessary that the Consolidated Gas Company shall begin construction of additional plant capacity for its needs immediately, this spring, as soon as we can for completion and operation before the winter of 1925-1926. That is, for the completion by the first of De-

cember, 1925, before the winter season comes on. The need for such additional plant capacity was shown to us by the studies to which we referred heretofore. Such additional plant capacity would be built at Hunts Point. For the next plant unit I both selected and recommended the site, and it was approved and purchased by the company and the beginning of work there has been authorized. I said two years is the time that we ought to have to build a new coal gas or water gas unit and completion within less than that time was under pressure. We are under the practical necessity today of building and completing such a unit at Hunt's Point in less than two years. In order to maintain the reasonable reserve we should have the plant in operation by December 1, 1925. Our first construction at Hunt's Point will be water gas, in view of the present conditions. With gas of less than 650 b. t. u. required by statute, we do not regard ourselves as able to build coal gas plants or units at this time at Hunt's Point. I think if we are compelled to produce a gas of not less than 650 it is a question as to how much coal gas would be built, and we would like to have a ratio of about 25 and 75.

[fol. 1767] Under no conditions with the 650 b. t. u. gas could we build and start a coal gas plant prior to the installation and the starting of the water gas plant. In other words, it would require a water gas plant in connection with the coal gas plant to maintain a proper b. t. u. content of, say, 650. Leaving out the time element and the fact that a longer time is required for constructing coal gas plants than water gas, and leaving out for the moment the question of the statutory requirements of gas of not less than 650 b. t. u.'s, I would prefer to build at Hunt's Point some coal gas units first. But in view of the time element and in view of the statutory requirements we are unable to do that. We would naturally build some coal gas first to keep our ratio, if it were not for these other factors. We plan to build more units at Astoria eventually, but we expect to put our next installation or our next proposed installations at Hunt's Point. I regard it, both from an operating point of view and the assurance of a constant supply of gas, it is infinitely better for the Consolidated Company to spread out our manufacturing plants. It is our plan to

first develop this new plant at Hunt's Point, beginning construction of our first water gas unit just as soon as we can. In my judgment and to my knowledge, the 14th Street and 42nd Street plants were economical units for the purpose for which they were used down to the time when they were retired and sold late in 1923. I have not a bit of doubt about that in my mind. I would not have deemed it wise or prudent to have retired them from use before that time. [fol. 1768] Before the conditions which came about in 1923 I would not have recommended their retirement. I had been seriously considering equipping at least the 14th Street plant for year-around operation. Plans had been drawn. Until such a time as we acquired additional property, until such time as we found we were unable to acquire property at any place, we would certainly never have discarded the 14th Street plant, because we would have made that into a modern plant or required that ground for additional plant capacity, at a later date. Until the conditions came about in the year 1923 which I have described, as to the acquisition of a new plant site and also the providing of the approximate capacity of the 14th Street and 42nd Street plants in the lower parts of Manhattan Island, I would not have recommended the retirement of those two plants from use and when those conditions came about I recommended their retirement.

As to what plant unit it is contemplated to build—units sufficient at Hunt's Point, the installation was designed—that is, the water gas plant would probably be designed for a thirty-six million unit. Whether or not we get the entire thirty-six million in operation as of the beginning of December 1, 1925, we are not sure at this time. The buildings would be laid out or built for a plant of thirty-six million. It might be that the extent of the actual manufacturing or generating capacity would not be more than eighteen million. In other words it would be in units of eighteen to thirty-six.

[fol. 1769] I think our reserve at this time is about 17 per cent. In my judgment when we reach a 20 per cent reserve we should commence the installation of plant, and such installation should be such as not to exceed approximately 25 per cent; that during this construction, however, during this period of construction, the reserve would natur-

ally fall much below 20 per cent. Just how much, of course, would depend upon the conditions as of that time.

By the Master:

If we should build that would apply. Of course, the Consolidated now we assume—that is making the estimates as to the Consolidated capacity requirements—is 80 per cent of the Astoria plant; the other twenty per cent is used by others. We would require the erection and completion of a plant of 51,000,000 capacity by December 1, 1925, in order to give us a reserve of about 23 per cent for the system, that would be 22.86 per cent.

By the Master:

As to what reserve there would be for the system if we should build a 36,000,000 plant and apply that installation to the Consolidated Gas Company by itself or entirely for the Consolidated Gas Company, the Consolidated Gas Company itself would have a reserve of slightly over 25 per cent. About 25 per cent. That is with 36,000,000 installation applying to the Consolidated Company itself.

By Mr. Ransom:

That would be during the winter of 1925-1926, on 18. The Consolidated alone, would be 12.6 per cent with an 18,000,000 installation. That applies to the Consolidated Gas Company. The 17 per cent reserve was for the system that I am referring to.

By the Master:

As to the system with the completion of the 18 unit and [fol. 1770] the 36-unit, it may be possible that we might not have the full building and we would surely undertake to have the 18,000,000, and be sure of that; and it is just a question, starting now, whether or not we would have the 36,000,000. That is, from a construction point of view it is a very short period of time to undertake to start and complete a 36,000,000-unit even of water gas. It is our plan to lay out and to build 36,000,000. We are going to concentrate on the completion of 18 as absolutely required. I cannot say at this time whether or not we will be able to

complete before next winter the installation of apparatus, etc., for the other 18. It is intended at Hunt's Point as soon as it may reasonably be done within the limit of time, if the question of the 650 b. t. u. statutory requirement were eliminated, to build coal gas capacity. The building program to which I referred contemplates the building of coal gas after we have some water gas in operation at that point. It would not be practicable with a 650 b. t. u. statute to place in operation any coal gas at Hunt's Point until we had water gas in operation. As of December 1, 1925, we should have a reserve based upon our past operations of 22.8 per cent, with an installation of a 51,000,000 daily capacity plant, which would be a water gas plant of 36,000,000 and a coal gas plant of 15,000,000. So unless we have completed by the fall of 1925 the 36,000,000 of water gas and 15,000,000 of coal gas our reserve will fall, on the system, way below 22 per cent. The reserve we would have with the 18 and the 36 million additional, both at 18 and at 36, on the system—With an 18,000,000 completed as of De-[fol. 1771] cember 1st, 1925, and based upon the send-out of the maximum day which we will have as of that date or during that winter, an 18,000,000 would bring our reserve down to 7½ per cent on the system, and with 36,000,000 down to 16⅔. As to the Hunt's Point itself, my recommendation as of this time would be to increase the Hunt's Point to a capacity of about 100,000,000; that is, to build a plant there of a capacity from 80,000,000, to 100,000,000, closely approximating that of the Astoria plant, and at this time you would extend the Astoria plant. That contemplates the completion and the installation of a plant of that capacity, that is, our plan contemplates the installation of a plant of approximately 100,000,000 at Hunt's Point, in the winter of 1931.

By the Master:

In other words, that is approximately a seven year development.

By Mr. Ransom:

That building program is based on the increase in our sales according to the basis of our last twenty years. If the increase should develop actually in the ratio of the last

ten years or of the last seven years we would have to get that capacity, it would on a ten-year period. That is, assuming that the system's sales are going to be in the same ratio in per cent as they have been during the past ten years, it would take somewhere between 1928-1929. That is, some time in the year of 1928—for the winter of 1928-1929. We would have built one hundred million cubic feet, if our sales are going to be increased on the ratio of the increase during the past ten years. Supposing that the increase were in the ratio of the increase actually realized during the past seven years at the end of 1927 a one hundred million daily capacity would be required at Hunt's [fol. 1772] Point. So that for the winter of 1927-1928, if we should find that our sales continued to go up at the ratio they have for the past seven years, we would have to have a one hundred million daily capacity at Hunt's Point. Somewhere between 1930 and 1931, on the seven-year basis of our last seven years, by 1931 we would require for the use of the Consolidated Gas Company alone about 252,000,000 capacity, and they have now 136,000,000, including their capacity at Astoria, which would make that something about 120,000,000 required at the end of 1931. That period would be reached between 1933 and 1934 on the ten-year period, and on the twenty-year period at the end of 1936.

By the Master:

It is difficult to give the approximate amount the Hunt's Point property would take care of. We would make somewhat more than the 100,000,000 capacity; it depends. It is pretty difficult to say as to how much coal gas was going in it or water gas. We could make a great deal more coal gas in the Hunt's Point property than we could water gas. We would have a definite program if we knew the b. t. u. content going into the gas; then we could safely say what we could do. Otherwise, if we are going to continue at 650, the probabilities are that the amount of coal gas would be small.

By Mr. Ransom:

If I stated that we could make more coal gas at Hunt's Point than water gas so far as available land there is concerned I wish to correct that. You could make a great

deal more water gas than you could coal gas. We feel that we have land there adequate for the development of a balanced plant of one hundred million, or something more, if we could develop on the lines that appear to be sound at this [fol. 1773] time, whereby at some time or other we might have a ratio of 75 water gas and 25 coal gas, whereby we could use the coke from the coal gas for water gas production. Inasmuch as we do not have that ratio now, that percentage at Hunt's Point would be greater than 25 75. In other words, I think that the Hunt's Point property should be about 40 and 60, and on the basis of 40 and 60—I should say on that basis we could make probably 140,000,000. When I refer to my apportionment of 75 and 25 and the apportionments that I have now, of course, we operate largely the system, and if it were on the 25 75 basis the probabilities are they would all be pretty much on that basis. When I say 25 75, I meant that to include the capacities of the system as a whole. Of course, there are some of the affiliated companies that are purely and simply water gas plants, and that would mean that the Hunt's Point and Astoria would have a greater percentage than 25 75 to make that apportionment throughout the entire system. This ratio of 75 and 25, is the ratio I would like to observe according to my present judgment, so far as the Consolidated Company and so far as the system are concerned, giving us a reasonable b. t. u. content. My recommendation at this time is that in the interests of both the company and the consumer, it would be infinitely better to have a ratio of 75 and 25. If we go on to a high b. t. u. content, such as 650, I think that the amount of coal gas produced in addition to what we have is extremely limited.

[fol. 1774] We would not; could not be able to go ahead with that ratio in the system or for the Consolidated Company alone with that statutory standard. Because we can only make about a 550—from 550 to 585 b. t. u. gas, from our coal gas operations, so that it requires a hydrocarbon in the form of an oil gas or in the form of a carbureted water gas to bring it up to 650. If we should undertake to make a plain coal gas of say 575 b. t. u.'s and undertook to enrich that to 650, not less than 650, by straight oil gas, I do not think the product would be fit to use. I do not think that is a sound commercial method of enrichment. It

would be a very unsatisfactory. It would be hard on our business, because I think the service would be entirely unsatisfactory to everybody that used it. And so as a practical matter I consider myself under the necessity of enriching the coal gas by mixing it with water gas so that if the statutory standard remains 650 we would not be able to go ahead with this 60 water gas and 40 coal gas percentage for Hunt's Point. At the present time I regard the development of approximately one hundred million of capacity at Hunt's Point as the desirable unit there, for this reason: We have a plant at Astoria now which is 86,000,000. It is a large plant, and to undertake to increase the capacity at that point, Astoria, would mean that if anything happened at that point, that practically all of our eggs would be in one basket. It would be, I think, very unsafe and very unwise for the Consolidated Gas Company to consider putting their entire production plant at one point. There would be no economy in operation, but, the [fol. 1775] disadvantages would be very many. In the case of accidents, labor troubles, many things that may happen, that do happen, would—well, I venture to say that it would probably result at some time or other in some portion of the City of New York being without gas; and it is for that reason purely and simply, aside from the question that the area there at the Astoria plant is of insufficient size to take care of us for a great period of time, and we certainly must look ahead to find a site. Certainly the Gas Company, which is very much on the order of the Gas and Water Supply here in the City of New York, the City of New York is not criticised for providing dams and means of getting water here fifteen, twenty of thirty years ahead. They are commended for that. We are simply trying to do the same thing, and while we are in hopes that an invention of some kind will come along to relieve us of this situation, until there is such an invention we certainly must provide for it. Until we provide some substantial amount of plant capacity at Hunt's Point I would not regard it as advisable to add to the capacity at Astoria. After that there is a possibility of some enlargement at Astoria and after you have developed a plant of one hundred million at Hunt's Point I think I would consider that there was still a possibility of putting in up to forty million more there. I regard the

site which we have selected and purchased as suited for the development of a one hundred million plant, and it was for that that we selected it. But we would have a limit of say forty million more without detrimental overcrowding. I [fol. 1776] think that the plans can be laid for that capacity.

As a safe or prudent reserve capacity I think 7 or 16 per cent the percentage we would reach if we were able to complete only 18,000,000 or 36,000,000 the number of 1925-26 are much too low. Our present reserve as I recall is about 17 per cent.

Cross-examination by Mr. Donnelly:

I am Chief Engineer of the Standard Gas Light Company. The manufacturing plant of that company is located at 115th Street and East River. Its daily rated capacity is ten and one-half million. I personally do not receive a check as salary from the company. I do not know whether it is charged to them or not. My duties as Chief Engineer of the Standard Gas Light Company are such duties as a chief engineer would be required to perform, that is, in charge of the manufacture and distribution of the general mechanical departments of the Standard Gas Light Company. During 1922 and 1923 I frequently visited the plants of the Standard Gas Light Company. Those visits I would say were not daily. I could not tell how frequently those visits occurred. There have been times I visited once a week and at times I probably would not be there for two or three weeks. James S. Kennedy is the superintendent of production of the Standard Gas Light Company. The Mains and Services Department is operated by the Consolidated Gas Company. So that the Standard Gas Light Company has not itself a Distribution Department head, in so far as mains and services. The meter shops and so forth—that is the operation of meters, the indexing, setting [fol. 1777] of stoves and meters, and so forth, they have a head—a man by the name of Kelly. I am in frequent consultation with those employees of the Standard Gas Light Company in so far as the manufacture and distribution. I do not have a great deal to do with the distribution, that is as to the setting of stoves, meters and so forth, unless there is a question of engineering or some question which comes

up—a question of operating—which might be brought to my attention or might be brought to me for discussion. Through my department, the quantities of gas oil and coal which are to be delivered from time to time to the various plants in the Consolidated Gas Company system is determined. We have what we call an engineer of distribution and one of his duties is to see that all plants are properly furnished with both coal and oil. These things are brought to my attention and if there is any material change in the character of the fuel and there is a general routine that takes place from day to day. For instance, we might want coal yesterday or today or next week, and the thing would go on, even if I was not there. The Consolidated Gas Company buys its gas oil coal for the requirements of the Consolidated Gas Company and its affiliated companies. From time to time, under those coal contracts and gas oil contracts, various quantities are delivered to the various plants in the system. As to the quantities delivered, I determine the quantities when and as delivered that are delivered at the various manufacturing plants. That comes under my judgment. The operation of the Standard Gas Light Company's manufacturing plant is under my immediate supervision.

[fol. 1778] Simply as the head of the department there, of course, we have the heads of the departments and superintendents of the plant. I would not say I was supervising them, because I am not there as a superintendent to supervise. I have general charge and have access to their accounts, which are sent to me, which I analyze, and it is through the analysis of these different companies, which I think is of more importance to the Consolidated Gas Company, in that it gives us a broader scope as to what the other plants are doing. Even if they were not connected with the Consolidated Gas Company I would be very pleased to have these reports and analyze them and be permitted, to visit these plants, in that it would be of distinct advantage to the Consolidated Gas Company. In like manner, I think that the Consolidated Gas Company is of benefit to them in that they have the same means of analyzing costs and operating conditions of the Consolidated Gas Company's plants themselves. It is a general supervision which I exercise over several plants in the Consolidated

Gas Company system. Now, during 1922 and 1923, and thus far in 1924 personally, no, I did not have anything to do with the hiring of any of the labor employed by the construction and distribution and other departments of the companies of the Consolidated system. I do not personally, employ any of the men that perform the duties either in the street department or any place else. That is something that somebody else had to do with. I am not called in consultation by any of the companies in the system in so far as the hiring is concerned. In so far as the rates of pay I [fol. 1779] would, but as far as the hiring or firing, I have no real supervision over that. Since January 1, 1922 the extension of the 21st Street plant I think was done. The plans for new construction were recommended by me. There is a difference in my mind between supervision and engineering. Supervision is seeing that the work goes on properly and I haven't the time to do that. I might go around and inspect, but so far as the supervision of seeing that it is properly done, I do not. That is done in the Construction Department. But when it comes to a matter of accepting the work that is done, it would be accepted by the Construction Department. That is, I would get the approval of the Construction Department that such work be accepted and, upon their approval, if I found any fault, I would say so and if not, I would approve of its recommendation. Outside of that new construction at the 21st Street plant whatever was done—I do not recall just how much or how little without looking it up—would have been done on my recommendation. There was a good deal done in the plant of the New York & Queens Company since January 1, 1922; that new construction was done as a result of my recommendation. There were small construction items. There was something done—I would not say the extent. It would include the Astoria Light, Heat & Power Company. I am Consulting Engineer of the New York and Queens Gas Company, and as such did I receive a small salary from that company. I might say, in connection with that, that prior to that time that the New York and Queens Gas Company was taken over by the Consolidated Gas Company that I was vice-president and consulting Engineer of the New York and Queens Gas Company at a salary of $500 a year. When they took it over

[fol. 1780] and the Consolidated Gas Company acquired the property they seemed to think I was entitled to that $500, and I still receive it. I receive a salary from the Consolidated Gas Company. I receive a salary from the Astoria Light, Heat & Power Company as President and Engineer. Within the last two years; and I have always received a salary from the Astoria Light, Heat & Power Company.

Since January 21, 1922 I have frequently visited the manufacturing plants of the New Amsterdam Company. That plant is located at the corner of Webster and Vernon Avenue, Long Island City. That plant has a production superintendent. The service department of the New Amsterdam Gas Company itself has no mains and service department other than that that is handled by the Consolidated Gas Company. The East River Gas Company, which is a subsidiary or affiliated with the New Amsterdam Company, had its own mains and service department which takes care of their business in Queens. Since the first of January, 1922 there has been some extension of the coal bunkers and coal handling apparatus which is now in process of construction, since 1922, being built as of this year, being built as the result of recommendations made by me. And, in the course of my visits, to the manufacturing plant of the New Amsterdam Gas Company I have both given and sought advice from them. It is a sort of mutual arrangement. They get as much out of it as I do. I was there for the purpose of seeing that the work was going on all right, and to learn; notwithstanding my 40 years of experience there seems to be a lot I do not know. And to see if I could make any recommendations as to improvements [fol. 1781] in gas manufacture, and to get suggestions from them. I get many things from these men who are in closer touch with the plants. There is not a day that I do not find, by consulting the men who are there on the ground that cannot give me some advice, and I am glad to respect their thoughts on the matter. I also make frequent visits to the manufacturing plant of the New York and Queens Gas Company, not as often as I do on the system, but I do occasionally. And have conferences and talks with the people who are making the gas there, advising and consulting as to how the work can best be done. The answer would

be the same as to each company. In other words, that would hold true with each company affiliated with the Consolidated Gas Company, as well as the Consolidated Gas Company.

Since January 1, 1922, I have not kept track of the time devoted by me in these visits and conferences at the several manufacturing plants of the gas companies affiliated with the Consolidated Gas Company. I have felt that, while visiting these plants, I was doing a service to the Consolidated Gas Company. I have not had any conference at any time since January 1, 1922, with anybody connected with the Accounting Department of the Consolidated Gas Company as to the time devoted by me to the services of the respective companies in the system, nor did I make any report of that time. I have not any knowledge as to whether or not any apportionment is made of the compensation that I received from the Consolidated Gas Company to its affiliated companies, and I see no occasion or reason why there [fol. 1782] should be any allocation. I did not confine my activities to any particular plant of the Consolidated Gas Company and its affiliated gas companies. As to when any part of the plant or equipment of the Consolidated Gas Company and its affiliated gas companies should be retired from service, would naturally come before any apparatus is retired from service, it would be brought to my attention. The recommendation would be made to me and I would disapprove or approve of it. I think in every instance there would be a letter of some kind. My determination of disapproval or approval would be evidenced by a written report to the Consolidated Gas Company. The retirement would be for just two reasons: Either inadequacy or obsolescence. Inadequacy would be the result of increase in business or increase in the capacity of the plant by the particular unit, whatever it may be, whereby it would become inadequate to give service—either a proper amount of service or economical service. Under those conditions the retirement is a result of practically an increase in business. Retirement for obsolescence would be due to an advance in the state of the art, whereby it could be shown that the installation of a new type of apparatus could be put in and could be operated at the lesser cost than the one under consideration for obsolescency and pay

the interest on the additional expenditure of money incurred and to provide for the retirement of the property to be retired. In other words, when you speak of retirement of property, simply because you can put in a piece of [fol. 1783] property and show by that you can save one, two, three or four cents a thousand cubic feet on the production cost and say you are justified in putting in a certain type of apparatus, it may be that the retirement expense—a new property is being put in solely in the interest of economy and in the interest of the consumer and the company must get the interest on the new investment, and somebody must pay for your retirement. So that a retirement, in my judgment, should not cover a period of more than ten years. In other words, ten years hence the piece you are putting in today might be in turn retired, so that the maximum time should be ten years. So that, in considering the economies resulting from a piece of new apparatus, the question of the cost of the obsolescence plus the interest on your money in this piece of equipment that is to be retired must all be taken into consideration, and an analysis of many items will show—that is, superficially looking at it, you say, why don't you retire this property and put in something that will do better work—but when you make the analysis you will find you had better leave things as they are if you want to sell gas at the price you are selling it for today. My recommendations as to retirements have to be approved before they become effective by the trustees of the company. The period of time elapsing after I make my determination that a certain piece of property is to be retired, before I make my written report on the subject might vary. I think there have been times when we have actually retired property from our accounts and yet the plant is still in place for operation. Many times you withdraw a capital account from the books where we [fol. 1784] have in some instances not actually withdrawn the plant or equipment from the property. There may be a question as to whether we can dispose of it to a better advantage at a later date rather than remove it at just that particular time. If it were a piece of apparatus, we might leave it there and sell it to better advantage later on. There would be many things entering into it. If it were thought it could be scrapped at a higher price, we would leave it

there for a period of time until the salvage might be somewhat improved, by waiting for a period of time. It might be a month or it might be six months, and there might be cases of longer than that. After I made my written report I would know very shortly whether my report has been approved or disapproved. After I make my report I may be asked by one of the officers as to why I made the recommendation before the board. I may want to get the facts on the case before my recommendation would go before the board and would probably be passed on at the next meeting. I only know that the authorization of the board is sent to the accounting department very shortly. I do not know definitely but I should say very soon after.

Robert A. Carter, Jr., is now engineer of Gas manufacture of the Astoria Light, Heat & Power Company's plant. I ceased to become engineer of manufacture at the Astoria plant when I became chief engineer, in January, 1922. As chief engineer, I exercised the same supervision over the gas manufacture at the Astoria plant that is, I am in touch with it. I go there frequently but I do not make that my [fol. 1785] headquarters, that is, at the Astoria. I make my headquarters at 130 East 15th Street at the general office building. I am at No. 130 East 15th Street pretty nearly every day, unless I get a day off sometimes, which is not very often.

To increase the calorific or heating value of blue gas, the hydrocarbon gas is added, the usual method being by the gasification of the oil, such as gas oil. Gas oil is a distillate of petroleum. That is a trade name. In other words, gas oil is usually a straight drawn distillation from the crude petroleum oil which, when collected, has a gravity of about 28 to 34 degrees. It is simply and purely a trade name of gas oil being used in the gas business for the purpose of making carbureted water gas. I do not know that the baume has any material effect upon it in increasing the heating value of the blue gas up to 537 b. t. u.'s. Any baume gravity which would gasify and give off hydrocarbon gases would permit the enrichment of a lower gas. The degree of baume in the oil which the Consolidated Gas Company buys from the Standard Oil Company is from 28 to 34. To increase the heating value of the blue gas up to 537 b. t.

u.'s the oil might possibly be at 20 degrees baume and it would certainly be possible to do it at 30 degrees baume. The oil must have the same degree to increase it up to 550 b. t. u.'s; 28 degrees baume to 34 degrees is simply a weight of the gravity of the oil. The lower down you go, when you get down to 20 degrees baume, it means that the oil is the same weight as water. There are hydrocarbons in all of these oils. The extent to which they are there depends upon [fol. 1786] character of the oil and naturally the lower you go down in baume you get the heavier hydrocarbon in the form of pitch and tar and so forth. There is very much less of the paraffine compounds, which are the fixed chain of hydrocarbons. That is a lower limit. Now, it is simply a question of whether you can use them economically or not. You get these heavier oils and you get into such an amount of trouble in your operation that they are unfitted for the purpose. Now, going on the higher range of gasoline, that has a baume gravity of about 70. I guess they are now as low as 63 or 64. We used to call them in late years gas oil as 76 and benzine as 70, before the use of gas oil by motor experts, and the baume of gas is lower. That of course can produce a b. t. u. gas just as truly as one of 28 or 30 degrees baume. To make gas of varying degrees of b. t. u.'s you have to have oil of varying quantities. It is the quantity rather than the quality. In other words, given oil of 28 to 34 degrees baume, which we have now, we can use a certain amount to produce 550 b. t. u.'s. It requires a certain amount of oil to produce a thousand feet of 550 b. t. u. gas and to use that same character of oil, it requires an additional quantity for these cubic feet to produce 600 or 650 b. t. u. You can use the hydrocarbons by the greater quantity of oil per thousand cubic feet of gas made. Assuming we were making gas of 550 b. t. u.'s delivered—using either a gas oil of from 28 to 34 degrees baume—and then suppose we were to change our manufacture so as to deliver gas of from 600 to 610 b. t. u. content, we could not get along with a lower quality of oil than 38 degrees baume. We would have to have the same quality of [fol. 1787] oil we delivered gas from 600 to 610 degrees as for 550 b. t. u.'s, as a matter of fact the higher up in the b. t. u.'s you go the greater efficiency you get by having a higher baume oil, because you have to put such a greater

quantity into your carburetor for the purpose of getting the quantity into the gas. Suppose we take the reverse of this proposition—that we are taking a gas of 610 b. t. u.'s—and dropped down to the delivery of gas of 550—assuming the same efficiency we could not get along with a lesser quality of oil for the manufacture of that 550 b. t. u.'s. In other words, if you would expect to get, we will say, as a round figure, which is good operating efficiency, 100,000 b. t. u.'s per gallon, if you were getting 100,000 b. t. u.'s in producing a gas of 610 b. t. u.'s you would require the same quality of oil at 550 b. t. u.'s to get an efficiency of 100,000 b. t. u.'s per gallon of oil used. Fuel oil is anything that can be burned in a boiler or anything else. The gravity of fuel oil might be anything. Oil might be sold as gas oil of from 24 to 28 degrees. You can call gas oil a fuel oil, but you cannot call all fuel oils gas oils. Gasoline is a fuel and can be classified as a fuel oil. I am quite sure there is trade significance so far as the use of the term of fuel oil is concerned. Just as I came from the Equitable Building over here, they were putting fuel oil into the building, apparently for the purpose of fuel, and from the smell of it and what I saw of it, it is totally different from gasoline. It looked more like water gas tar. What it was is a residual. There is nothing [fol. 1788] about fuel oil that you can say it has a particular range of quality running from a low to a high degree. Fuel oil per se—I suppose it depends on the question of supply and demand, but fuel oil may be anything that flows through a pipe. Take a Mexican fuel oil, they top it, and still have the residue, as it were, which they call fuel oil. They do not work it down any further because they can not ship it. There may be times when they have gas oil classified as a fuel oil. I think there have been times when fuel oil has been of the same quality as gas oil. But gas oil is a trade name of a product which is capable of being economically or efficiently used in the gas making apparatus. Fuel oil, per se cannot be used for that purpose. When I use the term gas oil I naturally mean by that that there might be attached to it such significance as would indicate that it is the kind of oil used in the manufacture of carbureted water gas. It is the oil used for that particular purpose and the fuel oil is oil used for fuel under boilers or whatever you want to do with it but, I do not mean by that, that gas oil is used only

in the manufacture of carbureted water gas. I say that gas oil makes an excellent oil for the manufacture of carbureted water gas, it is the gravity that counts. It may be down as far as 24 and as high as 38. When I go from 24 to 38 I am not talking about only gas oil, there may be fuel oils of the same gravity. The usual range is from 28 to 32 and I think there have been gas oils as low as 24 baume gravity. You can manufacture an oil by taking the residuum, as it were, which would be very low in gravity, of 12 or 15, and put some gasoline in and naptha—mixing that with this resid- [fol. 1789] uum which is very low in hydrogen content and therefore is unfitted for gas making purposes. Wherever you have that mixture and produce a mixture of 24 to 38 degrees baume—but it would be unfitted for efficient water gas operation. I think there is little or no difference in the quality of gas oil for the manufacture of b. t. u. gas as for the manufacture of 22-candle power gas. I have thought at one time, with b. t. u. *h*as, that you could use a little different grade of oil. However, my experience on the b. t. u.'s that we have been operating with is that it requires a good grade of gas oil or an oil of some kind in order to get good efficieney from the oil being used. I would not say it is just as good as we required when we were manufacturing 22-candle power, but, it is so near as good I cannot pick it out. If we had very low b. t. u.'s we might have a very different condition. We have made a gas of 650 b. t. u. for experimental purposes in testing out ranges, and so forth to see what would be the effect on the ranges in delivering a 650 gas, but, we have not for the purpose of delivering on the district. These experiments were made after June 2, 1923 when the law became effective; it was sometime after the law came into effect, the experiments were made in two places. We made some in 99th Street. There were some made at 21st Street. The greater quantity of them were made at the 111th Street Laboratories; and some at Astoria. In some cases we used the same gas-making machines that we do in our ordinary business, in others, not. They were the same type of machines. At 21st Street, for [fol. 1790] instance, when we made our experiments there we made a high quality gas on one machine and collected that into a reservoir for the purpose of making tests. At Astoria they used both a mixture of coal and water gas in

order to determine what the effect would be with a mixed gas. At 11th Street they made a high quality of oil gas and mixed it with the gas actually on the district. In other words, it was brought up to that point. We made experiments along those lines to see whether or not with a range up to 670, I think—mingled an oil gas or an acetylene gas for the purpose of determining what effect it would have upon ranges; and then the question came up as to whether or not this experimental gas would operate the same way as it would have done had we been producing it commercially. So we made the same experiments in a commercial way and found the results were the same. Then we went back and made further tests in an experimental way, having demonstrated that our experimental gas had the same effect upon the ranges as our gas which we would have produced in a commercial way. The gas was produced of a certain b. t. u. and then that gas having been produced we experimented with the ranges to determine what effect it had upon—the ranges, appliances of all kinds. The machines with which the experiments were made at those various places that we have enumerated were not of the same rated capacity; that would not make any difference, in so far as our experiment was concerned. What we were trying to do was to make a gas having a quality of not less than 650 b. t. u.'s in a commercial apparatus. The quality of the oil with which these experiments were made was the same as we were using, [fol. 1791] whatever it may have been at that time in our ordinary manufacture. The gas from 21st Street was conducted into a small holder and the ranges themselves were in—what we had at one time was a laboratory at our 21st Street station, on the third floor. At 11th Street it was in our experimental laboratory there; that is, our physical laboratory at 11th Street, where the tests were made. I do not know what were the distances that separated the ranges from the machines. It was several hundred feet but if it had been several hundred miles, it would not have made a particle of difference. It would not have made a bit of difference. The gas was taken into a holder. But it was first entirely purified. So it did not make a particle of difference. We could have taken it to Yonkers or Hoboken and the results would have been exactly the same. We did make some tests at the Rye works up in Westchester County.

We had a small plant there and made a gas of various b. t. u.'s and took some ranges there also. We used a part of the plant of the Westchester Lighting Company for making some experiments. There are several types of gas ranges being used by consumers in the City of New York. We took several types of ranges that we made these experiments with. I don't know, they must have tested—and I am only giving it to you from memory—but they must have tested fifty or sixty different kinds of appliances. They had ranges and heaters, and flatirons, and whatever was used. I think we took one of pretty nearly all of the different types of heating and cooking appliances as were generally found on the district. I would not say that there was one of every type; but I would say that in many instances [fol. 1792] there was more than one of one type. In other words, I think where there was a particular type of range where they were many thousands in amount, they did not confine themselves to one; they might have gone and taken ten or fifteen of those. The condition of the weather at the time that the experiments were made would have nothing to do with the experiment itself or with the results reached by the experiments. The question, was I thought, what the b. t. u. content of the gas was that was being supplied to that particular appliance, it would not make any difference about the weather. Whether it was hot or cold, not a bit. Or whether we had extremes of temperature; the extreme of temperature would have affected the b. t. u. coming into that appliance; but having gotten into the appliance, why, the effect of temperature did not affect the test in any way. These appliances which were used in the experiments were appliances that were taken from all over different parts of the district; of every company in the affiliated system and in every district of the Consolidated Gas Company, that had actually been in use by a consumer. We went out and simply at random—they did not try to pick anything—put in another range and took that in for the purpose of finding out what it would do, making no adjustment whatever. In other words, what we were trying to find out was what these appliances as were on the district—what quality of gas we could produce without creating trouble to the consumer. There is no doubt that there are some appliances that are better than others. If I saw anything

that was out of order, I would speak to the superintendent about it as to why such repairs had not been made. Re- [fol. 1793] pairs which are kept up, however, are on recommendation of the man particularly in charge. If it should be a repair involving some considerable amount of money, why, it would be brought to my attention. The ordinary normal repairs which are taking place every day, day in and day out, that is a matter of routine to keep our plant in good operating condition. That is to say the ordinary routine repairs that I found from my experience to be necessary in gas manufacture were attended to by the employee in charge as it should be. If it is a repair involving an unusual expenditure of money, I would know about that. If it has to be repaired, it has to be repaired. There would be a question as to how the repair should be made. That would be the question. It would not be a question as to making the repair. The probabilities are on the question as to how the repair should be made. If it was a major repair, the recommendation for the making of it would not emanate from me. It may and it may not. If it were a large repair, the man in charge might call my attention to the fact that there is such a thing. A man might want an entire new roof on a building. Whether we would replace it by that or replace it by something else, it would then be a question as to how it should be done. There would not be any question as to the repair being done. It would be as to the method or quality in making the repair.

[fol. 1794] Regarding a major repair to a piece of apparatus or equipment. I would follow the same line. If it was simply a plain, ordinary repair, that is, an actual repair, if the part was there, I am sure there is very little about it that I know anything about. I might not see it. The question of major repairs would be brought to my attention; anything involving any amount of money, I would be consulted about.

From the original installation of the equipment in the several plants of the Consolidated and its system, there has been no loss but increase in manufacturing capacity; that applies to all of the manufacturing plants of the Consolidated Gas Company including the affiliated gas companies, and likewise Astoria. I think the 14th and 42nd

Street-, as of the time they retired them, made more gas than when they were originally installed.

By the Master:

Those plants were kept in condition so that they could be started up in case the amount of gas they made was necessary by reason of any demand. Within a week's time, if the plants were kept in condition, it would require about a week to bring the benches to a heat whereby they could make gas, and during that week the plant would have been purged and put in shape so that in a week's time gas could be made. During that time, keeping a plant of that kind in reserve, assuming that that was a reserve plant and not actually operated, it would be handled in one or two ways, and we did both. That is, if we felt we were not going to operate the plant for a period of a year, and after we had [fol. 1795] finished our D. unit at Astoria, we felt that while they were reserve, that we could take somewhat of a chance of holding them ready without putting them actually under fire. Now, there was a time that we kept gas on the entire outfit, that is, throughout the entire plant, and where they were in that condition for a considerable period of time. On two or three occasions we actually purged the apparatus and cleaned it all out and built purifiers and had everything ready, except that there was air in it instead of gas. Now, what would be necessary when we started to make gas would be simply to open the valve connecting that with the Astoria and let the gas back up and purge those lines—purge the entire apparatus to go ahead with it. Now, that would take four or five days or a week to get that in shape and have our exhausters and things turning over and would take about the same amount of time to get the men together and put the heat under our benches and get them up to a heat whereby we could produce gas. We have to get our benches to a certain temperature before we can start producing any gas. That is, of course, you can make a limited amount of gas under lower temperature. The ordinary high temperature distillation apparatus such as we had there would be about 1,700 or 1,800 degrees in the retorts. And, of course, on new equipment, if the plants had been—that is, the benches and retorts were new and had never been fired, it requires some considerable length

of time to heat them up. Undue expansion by an application of heat too rapidly tends to crack them. So that with [fol. 1796] a new installation, for instance, if you were building an entirely new plant or rebuilding the bench entirely from the center line to the arch, it would require a longer period of time. In other words, it would require about three weeks to bring that to a proper heat without hurting the benches. However, after having been fired and all thoroughly dried out, I have seen them brought up to a heat within 48 hours. So that when I say a week, I have gone the limit.

By Mr. Donnelly:

Speaking of the increase in manufacturing capacity since the original installation, that increase has been due to certain improvements made to the plant and equipment. Operation had a good bit to do with the increase in manufacturing capacity. I mean by "operation" rather, an advance in the art of knowing how to operate. An example of it would be the "C" plant at Astoria, which was built in 1912, and it was built and designed for a 20 million foot plant, and we felt that we could make 20 million foot conveniently in it. That was assumed that that was all that would be made, and when we first started it, I think it was then along at about 22 million or 23 million a day. That would be its normal working capacity. At the present time, while there has been no physical change in the apparatus in any way, the original capacity of that plant is 30 million. We put in the "D" plant at a later installation and assumed that we would make 30 million on that, and it did make 30 million, and we rate it today at 36 million.
[fol. 1797] I am only trying to give an illustration that I don't think of course, there have been improvements, and I think we are operating now on higher blast pressures than we were at the installation of the apparatus. 99th Street, as I recall, where 10-foot machines were rated, I think, at about 1,200,000, and when they were put in I think that we ran along for a period of time at 1,200,000 per day for each machine, they will make now something over 2,000,000—around, 2,000,000. Previous experience indicated we were going to get 20 out of "C" plant at Astoria and when

we got through, we were getting 30. There was an increase in the efficiency in the method of operating. The labor—I think the labor is worse now than it has been since I don't know when. The method of operating has changed. The real cause, as I recall now, is probably due to two things: One is a short cycle of operation which years ago did not exist. It has simply been a development. In other words, the blow used to be about 10 minutes and the run about 10 minutes, and now the run is about 2½ or 3 minutes and the blow from 2½ to 4 minutes. In other words, the cycle is much more frequent at the present time, with the result that the generating capacity has been very largely increased. In addition to that, higher blast has done the same thing. It has been the high blast that has permitted us to make the low cycle of operation. The increase in manufacturing capacity has not been due to the installation of some brand new machines. There has been in some cases blowing equipment put in which probably was not equipped [fol. 1798] when the plant was originally installed, which would give greater pressure under the generators, and therefore to that extent that new machine did assist in the increased capacity of the plant. We have got this increased capacity out of the same generating machines with which we started; the generating machines which are making gas now at these various plants are the same they had there when we started in 1884. The installation of the apparatus is there today. Of course, some of the apparatus has been taken out. I mean, for instance, when you speak of original installation, the original installation of the present equipment. For instance, 99th Street, years ago, was operating on the Tessie de Motay process. There has been a change. In fact, all of our plants—not one of our plants, aside from the Astoria, *as* as it was 20 years ago. There has been a retirement of property and putting in of other property. Our 11th Street property at that time belonging to the Mutual, was a Wilkinson process, which was both a generator and a retort process. The 21st Street was a combination of the Tessit de Motay, which was very much like the Wilkinson process, and the Three-Shell Lowe apparatus, 99th Street, as I say, was a Tessie de Motay and changed entirely to the improved Lowe type. At some times we have found that our other changes with the origi-

nal connections were made too small for the increased capacity which we were able to get out of the generator. Advance in the art indicated that short blows and runs were of great advantage, and the increase in blast pressure permitted us to get this decrease in the continuity of the blow. [fol. 1799] Of course, that thing has been a development. I can remember years ago when my first—a good many years ago, when they were first making water gas, the man opened his blast valves and blew for thirty minutes and sat down and read the paper; at the end of 30 minutes he shut his blast off, and he turned on his steam and oil and he sat down for another 30 minutes. Well, there was 60 minutes used up in producing one run, whereas we do now about—well, in some of our operations we could make 12 runs in the same space of time. The size of a water gas set has something to do with its manufacturing capacity. Grate area has something to do with it. No doubt about it. None of the machines that were there have been replaced by larger machines, not of our present installation, that we have. The grate area that we have is exactly the same as when originally installed, with one exception, and that is at 21st Street where the original installation of the present equipment in the various plants of the Consolidated of five of the generators there was 13 feet in diameter, and they were removed and 12-foot put in their place, because it was found that 13-foot had not improved results and difficult of cleaning. They were removed some 15 or 18 years ago, I should say: I cannot recall the date. Including Astoria. Whenever those installations occurred; generating installations are not the same as they were in 1884. Some of the manufacturing plants of the companies in the Consolidated system are susceptible of still further [fol. 1800] increase in manufacturing capacity. With an expenditure of considerable money. Expenditure necessary to balance them, in other words, if you are going to undertake to increase your generating capacity and with the present plant—the plant is balanced to meet the present generating capacity. Then to increase the generating capacity the entire plant must be balanced to meet that increased capacity. We would have to add some new equipment. For example, the 11th Street plant: we have at that point 12 machines 12 feet in diameter which are

on the same diameter as they are at Astoria. They are operating under a lower blast. We rate that at 24,000,000. The C plant, which has 12-foot generators at Astoria, is rated at 30,000,000 and the D plant is rated at 36,000,000. Now, it would be possible to increase the 11th Street plant to somewhere between—well 32,000,000, 35,000,000, by a rehabilitation, buying additional property, putting in new blowing apparatus, new waste boilers, and so forth. The expense however, when you get through, would be to give you what we could erect that plant at another point for a given unit of investment. The expense necessarily incurred by buying another site and by equipping that new sit- with the necessary equipment to get that increased capacity. In other words, the point is that we could build a plant at Hunts Point at a given capacity for less money than we could rehabilitate or extend the Mutual plant of a like capacity. The compactness of a plant has something to do with its efficiency, sometimes it gets too compact.

[fol. 1801] When you haven't any room, when you speak of extensions. That is the condition of the Mutual plant as of today. The Mutual plant was originally designed as a Tessie de Motay and later on was a plant of 10,000,000 capacity, and that plant has been increased from 10,000,000 to 24,000,000 on the same ground. The result is that it is packed, jammed in, and there is no room for any additional equipment to take care of any additional generating capacity that you might get from what generators are there. 21st Street is exactly the same way. We have increased that plant from 28,500,000 to 38,000,000, and it is all that that property is capable of handling. We have reached our limit there, in my judgment. 99th Street could be somewhat improved. That is, when I mean extended, not improved; but the plant capacity there could be extended; but to extend it would cost just as much as a new plant, and in my judgment it would be infinitely better to put that property, that extension, in a new plant where these extensions can be made at a lesser cost. For instance, to put in waste heat boilers and stoker-fired boilers and automatics and so forth, in a newer plant requires such an enormous expenditure of money that it is not justified. We have automatics; we have waste heat boilers; we have stoker-fired boilers; and if we felt it was an economy to each and every plant,

we would certainly put them in. It is because we have found on our calculations and our experience that it does not pay. In other words, why put a lot of money in investment when the saving won't pay the interest-carrying [fol. 1802] charge on the investment. We have plenty of room at Astoria for the time being, in my judgment. What will happen after 1942 or 1943, I do not know and I probably won't be here and I am not worrying much about that. But the forecast that we have at the present time, and certainly a man should look forward to the extent of 15 or 16 years, and my prophecy at this time which may be wrong, is that both Astoria and Hunts Point would be practically covered with production plant as of that time. I would not say 15 years from now Astoria will have reached the limit of further development. The figure that I have and that of course is based upon past experience, and it is all we had to go by, and that is based on our 20-year experience and not 10 or 7, that by 1940 or 1941, that the Astoria plant would be more than double its present capacity. At Astoria we have got about 340 acres of land. There is a considerable part of it bulkheaded, including that new bulkhead that was put along Luyster Creek. And certainly ample land space there, ample *sto*rage, facilities for coal, ample bulkheaded facilities, for the deliveries of material, for the addition of new equipment, manufacturing equipment, both coal and water gas. We have sufficient bulkhead facilities. That is, we have ample to take care of what I say there would be probably a little more than double its present capacity, and that is going to depend entirely upon conditions as to whether we are going to make coal or water gas, what the set is going to be. If we are going heavily into coal gas and the price of oil is so high that we would be justified in going to a greater percentage [fol. 1803] than I have testified to, then the plant capacity is going to be reduced. If, on the other hand, you make a greater quantity of water gas, in like manner the property there is capable of putting a larger size plant upon it and of course it depends upon the extent to which gas is going to continue to be used. There might be other things entering into it, I think gas is the cheapest thing that the City of New York is getting now, and that is the reason our consumption is going up. Certainly, we could get two

dollars for gas today for cooking purposes and it would be cheaper than coal. Gas is as cheap for cooking and other domestic purposes as electricity. I am not knocking electric companies but I do not think they can compete with us. I did not know that the consumption of electricity for cooking and other domestic purposes is running gas a pretty close race in the City of New York. Whether electric bills are cheaper than gas bills—they are using one for light and they are using the other for fuel. If a man has one electric light to read a paper by and he cooks his three meals and washes and everything else with his gas, certainly it ought to be a little bit more. Naturally part of the business of selling gas is to make its use attractive to the consumer and to demonstrate to the consumers the feasibility of its use, has been pretty well established now. I do not think there is any occasion for different things now. Naturally you want to push your product. That is good [fol. 1804] business.

By the installation of automatic stokers the manufacturing capacity of the water gas plant is not increased. If that is all you did that would not help you any. We could put in one hundred automatic stokers in a plant and that would not help us any. Automatic stokers are used for the production of steam, which in turn you put into a generator, simply because you put in an extra automatic stoker does not help your generating capacity in any way. In a large installation such as a power house, or that sort of thing, they have banks of these boilers where the coal is fed in from overhead, and an automatic stoker does two things; it reduces their labor cost and gives them a little bit higher efficiency, on the use of their coal, and increased their boiler capacity about one hundred per cent. In other words, hand-fired boilers, one hundred per cent rating is fairly good operation. In stoker-fired boilers, it is capable of getting up to two hundred per cent, which is of particular advantage to a power house and an electric company, where they have a variable load; that is, a heavy load coming on at night, where they may have a certain number of boilers operating during the day, and without putting on any more additional boilers by forcing their stokers increase their boiler capacity one hundred per cent. Offsetting that, it

is a fact that a stoker-fired boiler costs just double what a hand-fired boiler would be. In other words, if it cost you $100 for a hand-fired boiler, it would cost you $200 for a stoker-fired boiler, and you have gotten in a position to get [fol. 1805] one hundred per cent over-rating with your stoker-fired boiler. So one against the other, the investment is just the same, and whatever little saving you make is a saving in labor and a slight increase in efficiency in the use of coal. The installation of the boiler itself would not increase our capacity at all. You would have to go down the line. That would be only a means of giving you steam. Now, if you wanted to increase your plant, we will say five, six, seven million, and you did not have additional boiler capacity to take care of that five or six or seven million, and you did not have room enough to put in another hand-fired boiler, by the installation of the stoker equipment on one of your present boilers you could get the proper steam capacity to take care of your additional generating capacity which you propose to put in. The installation of waste heat boilers in a gas manufacturing plant does not contribute to the increase in its manufacturing capacity, in any sense. What it tends to do is to absorb or take up some of the waste heat which would otherwise go into the atmosphere. It decreases the cost of manufacture. The question is as to whether the interest on the investment is going to be more or less than the saving in production cost. That is the crux of the whole thing, as to whether it is going to cost you too much money in order to get the saving. The saving must be justified of a sufficient amount to justify the expenditure of the money. Stoker-fired boilers at the Mutual were put in when they [fol. 1806] were putting in a boiler installation—at the 11th Street plant, I think about two years ago we had one stoker-fired boiler there. We have no other stoker-fired boilers in the Consolidated Gas Company's plants, although we are putting in two stoker-fired boilers at 21st Street to take care of the additional equipment there. We have stoker-fired boilers at Astoria. Waste heat boilers we have at Astoria, which is the only plant, but on the two new installations—the two generator installation at 21st Street—we are contemplating putting in waste heat boilers, and

there is one machine just alongside of the two new ones where we find we have room enough to put in one for the third set. So far as we have gone, and we have not been able to demonstrate, to my satisfaction at any rate, what effect automatic controls have upon the efficiency or otherwise of the manufacture of gas, or that there was any economy in the manner in which we operate in so far as efficiency is concerned, with automatic control. There is a definite saving in labor. I had hoped that when we got automatic controls it would show an improvement in our operating results. I had hoped that, and I was rather pleased, however, to find that our manual operation was such that an automatic could not improve on it. We have those automatic controls at Astoria. We experimented first at one of our other stations, at Ravenswood. We have just one house fitted with the automatic control. That is our new house. I have not recommended at the present time, and shall not until I know more about it, the installation of any in our C-house. I would recommend them on a [fol. 1807] new plant. If we should put in any new plant I would recommend the installation of automatics because it can be done more cheaply then than at any other time, and the cost of them would just about justify the expense. That is, in the saving of labor. It has an advantage, of course, in that you are not so dependent upon labor with those things as without them. As to what good has been accomplished at Astoria by the installation of automatic control there I have just tried to tell you that it looks to me like a fifty-fifty proposition; that we could about break even on our labor proposition. In other words, I mean that the carrying charge—the saving that we would make in labor would about pay the carrying charge on our investment as a result of the automatic installation. In the plants of the Brooklyn Union Gas Company, I think they have put one or two. Just to what extent, I do not know. They are putting in the same kind that we have, and ours is the invention of one of our superintendents. One of our men invented it. I don't know what results have ensued from the installation of automatic controls at the plants of the Brooklyn Union. They have, I believe, increased some of their capacity. I do not think it has been due to the auto-

matic control, however. I think they would have done just as well without it. They have in a small way, tried out waste heat boilers, too, in the plants of the Brooklyn Union. I do not think they have done a great deal. They have not tried out the automatic stokers in the plants of the Brook- [fol. 1808] lyn Union. They may have one, if they have any installation, and I do not believe they have any. In searching for information which will help me to increase the efficiency of the plants under my supervision, their methods of operation, improved methods of operation, decreases in the cost of production, and so forth, I visit the plants of any other gas companies outside of our own system in the City of New York, at times I go to Brooklyn. I did not make any visits to the plant of the Brooklyn Union fairly recently, within six months. I have not been at the plant although I have discussed the matter with Mr. Bush the engineer of manufacture, who has been in my office a number of times.

[fol. 1809] Afternoon Session

George E. Wood resumed the stand.

Cross-examination by Mr. Donnelly:

At the plant of the Kings County Lighting Company they have put in automatic stokers and waste heat boilers. I am not sure but I think they have the U. G. I. automatic controls, and I understand they are getting good results. Beginning January 1, 1922, and continuing to the present time, the relative cost of manufacturing coal and water gas at Astoria—as applied between the coal and water gas—is more than water gas, I mean, in considering the production cost in that particular place. The only real comparison as to the efficiency of either the coal or the water gas would be the combination cost of the two. In other words, the water gas could not be operated as cheaply as it is now operated without the coal gas plant there. The cost of the water gas plant is lower. We could however, within reason, have charged the water gas plant at a

little higher price for the coke than we actually did charge, under the two plants as they were. In other words the coke is delivered from the coal gas to the water gas plant and is sold to the water gas plant at the same price at which we sell the coke to plants on Manhattan Island, which requires, of course, the additional handling of the coke and putting it into barges and delivering to the water gas stations on Manhattan Island, which in turn causes a greater breakage of the coke as a result of this handling and the coke itself is smaller, so that, in the handling of the coke [fol. 1810] such as we manufacture at Astoria, where such handling as is done in transferring from that plant to another manufacturing plant, the efficiency of the coke for water gas purposes is less than if delivered directly from the coal gas plant to the water gas plant at Astoria. We have considered, a number of times, as to whether or not to charge the water gas plant with a higher price for coke at the Astoria plant as compared with the delivery of this same coke to the water gas stations on Manhattan Island, and it is just a question of opinion, as to whether, if it was higher, should we penalize the water gas that happened to be there. In like manner, we might have said why penalize the coke plant because the water gas plant was there. So, that in arriving at the cost of production at Astoria it was necessary to base it upon the two plants in order to determine what the cost had been of the coal and water gas plant. By that I mean, if there had been no water gas plant at Astoria and we had transported the coke to outlying districts for use in our other water gas stations, the coal gas plant represents the cost of gas under those conditions due to the fact that the recovery from residuals is less than would have been the case and is the case when we deliver the coke directly from the coal handling plant to the water gas plant right alongside in coal gas operation. It may or may not cost more to manufacture gas by the coal gas method than the water gas method. It depends on the price. For instance, coal gas depends on several things, first the *first* of bituminous or gas coal, which is itself initially raw material. The sell- [fol. 1811] ing price—at what price you can dispose of these residuals is a very important factor of any coal gas pro-

duction. If you can get any high prices for coke, tar and ammonia, with a comparatively low price for the raw material, that is gas coal, then coal gas becomes comparatively speaking, cheaper than that of water gas. Water gas, of course, is not so dependent on residual returns. In other words, all the residuals they have is the water gas tar, so that, knowing the price of the anthracite coal or coke used for generator purposes, and the price of gas oil, you can approximate about what the water gas will cost. In coal gas, of course, you must know the other elements as to what you can dispose of the various by-products for. As a general proposition I have seen it both ways; coal gas manufacture is more expensive than water gas manufacture. I do not think you can call it a general proposition. I think in later years we have made water gas as cheaply as coal gas. Nobody could lay that down as to one or the other as a practical general proposition that under all conditions it would be more expensive to manufacture coal gas than water gas.

By the Master:

I am speaking of the cost of manufacture without the question of return on investment taken into consideration.

By Mr. Donnelly:

As our operation at Astoria have been conducted, it has been more expensive to make coal gas there than water gas. The combinations of the two, however, shows a cheaper product than we have made at the other plants. As to which of the two is the cheaper product—at Astoria, the combination of the two is somewhat cheaper than our production costs at the water gas stations. I tried to bring [fol. 1812] out that we, of course, could have within reason logically charged the water gas plant with the higher price for the generator fuel, which in turn, of course, would have been to the credit of the coal gas plant. For instance, and I am speaking generally—if we had to raise the price of our coke for generator purposes whereby the production cost would have been increased, we will say, three cents a thousand, by the increase of three cents a thousand and that would have decreased the coal gas cost somewhere be-

tween eight and ten cents. Without having the figures before me, I should say that the coal gas plant would have probably operated for two, three or four cents a thousand less than the water gas. Coal gas is made at the Central Union plant. Speaking of the same period, that is to say, beginning January 1, 1922, and down to date, I do not recall what the difference in amount has been in the cost of the manufacture of coal gas at the Central Union plant as compared with the Astoria plant. The operation at Astoria is somewhat less than that at the Central Union. Regarding that variance in production cost at the respective plants, the Central Union and the Astoria, of course you have a larger unit at Astoria. The operating costs, in so far as the efficiency is concerned, that is just as good at the Central Union as they are at the Astoria, but in some instances you find it is better. We use the Central Union to a large extent for the testing of coal gas which we can not do very well at the Astoria plant. At the same time they get the benefit of these coals as the result of the tests, and, [fol. 1813] of course, it results to advantage in determining the best coal to use as a fuel, which the other plant gets the benefit of. I mean for an appreciable period of time sufficient to enable us to determine what results have been achieved through the use of this coal that has been tested. At times we will try to put the Central Union Company on one kind of coal and we make tests under working conditions to determine the value of that coal, which, of course, results to and advantage to the Astoria company in finding what that coal is worth. We could use that same quality of coal at the Astoria with equally good results for the period of time involved in testing the coal at the Central Union plant if it happened to be a good coal, the results are reflected in a lesser cost. If it was a prior coal, it would be the other way round.

Differences in the manufacturing of cost of water gas vary every day and every week and every month. The net result being that for a calendar year of twelve months, we find differences in production cost. Those would be the elements entering into the production cost, the character of the equipment used in making gas and also to the character of the labor employed and also the human equasion in operating the machines. I think the character of the material being used, whether it is coal or oil—particularly the

coal, the human equasion which enters into it, the type of apparatus in so far as our operations are concerned, you have little or no difference. That is to say gas making labor at the respective plants is not always at the same character [fol. 1814] of efficiency. Of course, some of them are of different capacities and the different amount of gas being made sometimes reflects higher operating costs. For instance, at 21st Street, during the year 1923, when we were doing some construction work there, the make of gas was less than would ordinarily apply in a plant of that size—which affected labor charges. We were making some additions so there was a lesser quantity of gas made there than there would be on the average. Of course, that is always going on, but it did apply to the 21st Street plant for 1922 and the better part of 1923.

Speaking of the manufacturing plants of the Consolidated Gas Company and also including the Astoria Company, we have a frequent turnover in our gas making labor, that is, the operating men, laborers and mechanics and such labor as that, who are employed in the gas making end of it—the personnel changes very frequently. There is a frequent turnover. It depends rather on the law of supply and demand for labor. Sometimes it has been very high, as much as 100 per cent. Just what we are operating at the present time I do not know, but I should say 20 to 30 per cent. turnover. At the present time, I am just giving you my idea on that, I am not sure. There is a constant turnover. There is always somebody quitting that is dissatisfied with the job. I do not mean quitting in bunches, rather individual cases. You always have to have the plant maintained and if a man leaves tonight we will probably have a man in the morning. Of course a turnover is always an [fol. 1815] expensive operation. It requires a period of time in order to break these men in and, having broken them in, we have no assurance as to how long they are going to stay. It is one of the inevitable results of men not wishing to stay or wishing a better job or being dissatisfied. However, we have a great many men that have been with us for five or six years, but still we have that turnover. It is true that a number of men stay with us. The men that leave are the men that we employ from one month to a half a year. The turnover is in the new employees and that is a constant turnover. Speaking of that constant turnover

and confining myself to the men employed in the gas making labor department that is of frequent occurrence among the laborers and mechanics, the gas makers and pipe fitters, right down the line. That is true of some more than others. I think in the common type of labor, in the yard labor, you have a greater turnover than among the more experienced men. But those are replaced very quickly, naturally we must have enough men to perform our work.

No two of our gas plants are identical. I do not think there are two plants in the United States that are identical. As to wherein the variations chiefly consist—I would not undertake to—the general type of apparatus of course is pretty much the same; that is, it is a three-shell water gas machine. They have the same general characteristics but there is some slight modification as to detail. The boilers may be of two or three different kinds of types, all, however, equally efficient in the work that they [fol. 1816] are required to perform. The real difference is usually in the matter of layout, depending upon the size and character of the ground on which it is built and the way you build, and of course there is always the personal equation of the man that designed it. There would not be any progress if we all had the same ideas on everything. All of our manufacturing plants are located on the water-front and it is true that some of the plants are better equipped with apparatus than others. When I say they are, I think that, in so far as the equipment or handling material at the gas plants of the Consolidated Gas Company, including the Astoria, there is not a great deal of difference aside from that at 99th Street where unloading facilities are efficient, but the location of our generator house is such that it requires a greater cost to transport the fuel from the point of delivery to the point of use.

When I gave the capacity of the 14th Street and the 42nd Street plants as of June 1, 1923 I meant to imply that those plants were actually manufacturing on those dates. I think we made gas in 1919 and possibly some in 1920. I am not sure. At any rate, the plants were ready for making gas. In other words, they were fired under the benches in 1920 and in fact that was done until such time that we had the D unit in operation in Astoria. Each of the plants at 14th Street and 42nd Street posses the

equipment which, on June 1, 1923, gave each of them the percentages that I stated they had. In other words, they [fol. 1817] were so equipped as of June 1, 1923 and they did possess the manufacturing capacities that I gave as of that date. There had been some withdrawal of property prior to that time on the books of the company, I think, but there had been no physical change of the property itself. In other words, it was there ready for operation. There was a retirement from the capital account but no physical retirement of the property. That is, when I say "retirement" I mean it was withdrawn from the company's books. That equipment of this character: Coal handling machinery, coal shed, boiler house, exhausters and engines, 12 purifiers and connections, two station-meters, rotary washer, scrubber, tar and ammonia tanks and miscellaneous buildings and apparatus but there had been no real retirement of the property itself. I mean there was a recommendation for the withdrawal of the property from service—a recommendation was made that it be taken from the capital account of the company, but we made no physical withdrawal of any property at that time. There was a recommendation for retirement, but the physical property was there and capable of being used. In the manufacture of coal gas a greater amount of land is required than is needed in the manufacture of water gas. If you want to include the capital cost of a coal gas plant, it is greater per thousand cubic feet of daily capacity than that of water gas. The actual capital account, as far as buildings and apparatus, is about two to one and the land occupancy is about three to one. For a coal gas plant there would be required a greater coal capacity than for a water gas plant, and in the case of the coal gas [fol. 1818] plant no relief holders are required. Assuming a water gas plant and a coal gas plant, each of the same rated daily manufacturing capacity there would not be any comparison between the land space based by the absence of a relief holder in a coal gas plant and the land space required for the increase coal storage for a coal gas plant. When we consider the installation of the water gas plant, it means a relief holder in connection with the water gas plant, and when I say it requires a great deal more space on which to construct and operate a coal gas

plant it is considered that the other had a relief holder and the coal gas plant did not. I think I tried the other day to tell you that at Astoria, where we have a twenty million coal gas unit, that occupied as much space as two water gas units, which will make 86 million and the coal gas required in addition to that a greater space for coal storage. Coal gas equipment is more expensive than water gas, because the production units are smaller and require a greater amount of money. The production units are smaller in any kind of a plant, the particular unit is very much less than for water gas operation. For instance, of course, there are many different types of units. A unit on a water gas plant—take a 12-foot unit, from three to three and a half million cubic feet per day or a small ten-foot unit on a coal gas plant, a unit would be called a bench of 8 or 9 or 10 retorts. In our case we have eight in one case and nine in another. Or you may have a unit making 175 to 195 thousand per day as compared with the others [fol. 1849] making millions. If you put into practice one particular unit, that is an oven, you would have considerable trouble making 250,000 to 275,000. In a unit of that character, of a coke oven method there is very little difference from the unit of the coal gas plant, except the particular unit in the coal gas plant consists of 6, 7, 8 or 9 retorts whereas in the coke oven it would be one oven, but you can say, by and large, that in the water gas units such as we have, the unit capacity would be ten times that in a coal gas unit. For every pound of coal on water gas we would spend $2.00 on water gas. I do not think there would be very much difference, between coke-oven and coal gas equipment. I mean that the cost of equipment for the two respective plants would be about the same. Depending on the type of apparatus, there would be differences in cost. Depending on the type of the coke oven plant and the type of retort installation that you put in, I think there would be some slight difference in favor of the coke oven proposition. I would not like to contemplate the installation of any coke-oven installation at the Hunts Point plant on the 650 b. t. u. basis. I said we would put in a water gas, the question of coal gas depending on the conditions as to the quality of gas we were compelled to deliver and the price of coal gas installation is going to be

somewhat dependent upon the prices and the operating conditions. There are two or three types that might be considered. I think that a coke oven plant could receive [fol. 1820] some serious consideration. It is a question of whether or not we are going to install any coke oven equipment at the Hunts Point plant that is still left open. As to the particular type of coal plant there has been no definite decision. As to whether or not we will install any coke-oven equipment there, there are some advantages in the coke oven which I think will be admitted by all and it has some disadvantages, for instance, as a nuisance disadvantage, I think, in the way of smoke and so forth, which will be considered. They have not found anything as yet that is entirely satisfactory for neutralizing the nuisance coming from the smoke in a coke oven. That device is not of a similar general character to the device that is used to neutralize the nuisance effect of burning soft coal. It would be entirely different. The smoke resulting from a coke oven operation is at the time they are charging the ovens and the result is they put in 10 or 12 tons in the oven or retort, with the result that there is a great deal of smoke during the period that the coke is going in. Under some conditions I think the coke oven would be cheaper than gas coal. Gas is not being made anywhere in the City of New York by the coke-oven method. The only one that I recall in a nearby city is the Seaboard By-Products Company, which is a branch of the Koppern Company and the Public Service Company purchases gas from the Seaboard By-Products Company. That is over here in Jersey. Gas is being made by the coke oven method in the City of Chicago by the same people, by the Koppern Company. [fol. 1821] I have made a study of the result of producing gas by the coke oven method. I am generally familiar with the proposition.

As to whether it is cheaper to manufacture gas by the coke oven method than by the coal gas method—I think I can answer that in two ways. Given a good market for coke, I would say that the coke oven process would be cheaper than the retort process. Where a market for coke is poor, I would say that the retort process is the cheaper of the two, for the reason that, in a coke oven, instead of using a part of their gas for heating their ovens, unless

they put in—well, there is a recent invention which has been made use of—but I mean in a coke oven plant per se you get about 5,000 cubic feet of gas from every tons of coal—2,000 pounds to the ton, and that in the retort proposition you get 10,000 feet to the ton. In the retort proposition part of the coke is used for heating the retorts themselves whereas in the coke oven proposition the gas itself is the medium for heating the oven. In the retort proposition, for every 10,000 cubic feet of gas made you have 1,000 pounds of coke for sale. You can say in one case we have a thousand pounds for sale against 2,800 pounds. Now, if the market for coke is good, you can understand that the coke oven proposition will be profitable but if the market for coke is low you can understand it is a very unprofitable proposition. I have given study in connection with the coke oven method of making gas, to what the market conditions have been around the City of New York. The coke [fol. 1822] prices have been fairly good at this time. However, I recall in the last three years, the Seaboard By-Products Company had a coke pile three miles long. Once having built the plant, then you have got to bear the burden of the demand occasioned by this, that and the other thing. You might say it is a very profitable proposition today and unprofitable a year from now. That is one of the things no one can foresee. I personally would never recommend the installation of any kind of a coal gas plant or coke oven proposition or whatever it may be where we were dependent upon the operation of the plant by selling the coke. In other words, it is a proposition of whether it would be possible to make a sufficient amount of coal gas whereby we could use the residual coke with water gas production.

By the Master:

That is I mean, as a gas engineer, I think it is more desirable to install the character of gas manufacturing plant that, considered strictly from the point of view of the cost of making and selling gas, would be more desirable than one where the cost of making and selling the gas is dependent upon the by-products of the plant. In other words we are in the position of making and selling gas. There are many coke oven plants which are by-product

ovens, but their position is to make coke and gas being a by-product, and they are selling their gas as a by-product to some city or whoever may want it. Of course, if business get bad and they can not sell coke, they reduce their quantity being made and the amount of gas is being re- [fol. 1823] duced. Of course, we are in an entirely different position, because we must supply gas irrespective of the price of coke and if we can get an apparatus where we are not dependent as a selling proposition, on residuals—in other words, if we know what our raw materials are going to cost, we know the approximate cost of what our gas is going to cost. The other proposition depends, of course, on the price of coke. In other words, I mean it is more desirable to have known or approximate cost of making your gas and an approximate known cost of the return of the gas as made rather than have a quantity that may fluctuate. It is safer and a more reasonable way of knowing what you are going to do and not having fluctuations in your production cost as a result of things over which you have no control.

By Mr. Donnelly:

Gas is not being made by the coke oven method in the City of Rochester. There are other places besides Chicago where it is made. I recall two for the moment. Camden, New Jersey, I think, has a small installation. They are a branch of the Public Service Corporation of New Jersey. And there is a small installation in St. Louis, Laclede Gas Company. The Citizen's Company of Indianapolis are making gas by the coke oven method. At one time they were in very great straits because they were, a couple of years ago, and they went into the hands of a receiver. Their coke oven gas is being made to a certain extent in Indianapolis and also water gas. There were two companies in Indianapolis. On is the Old Indianapolis Gas Company, and the Citizens Company started with the production of making a coke oven gas to start with. They [fol. 1824] were fairly successful for some period of time. They had a good market for their coke and ran across the rocks three or four years ago and have been in considerable trouble since then. If the Consolidated were making gas by the coke oven method it would have a market for coke

with the other gas companies operating in the City of New York, to that extent and no more. There is a vertical processes of gas manufacture than those I have already enumerated. There is a continuous and intermittent vertical type; the inclined and horizontal. There are two—one or two inclined slopers, which have not been very successful. I have investigated all the processes I have spoken of. The back-run system is water gas. It is new. It is simply an application of the water gas method of manufacture. Since January 1, 1923 we have had explosions in the Consolidated itself, I don't—that is, we have minor explosions, that is, that are of no particular consequence; that is, it might blow open the door, or something, of a generator as a result of a flash-back, or a possible explosion in a gas main which would blow out the explosion head. Those are of fairly frequent occur-ence. No great damage done as a result of them, usually. Going back to 1922, I cannot recall anything, in so far as the Consolidated itself is concerned, in the way of any real explosion. That was a fly-wheel explosion at 11th Street. I did say at the Standard Company, there was an explosion in the purifying house which put one set of the purifiers out of commission for about three or four months. The Standard also had a fly-wheel explosion, the bursting of a fly-wheel, which [fol. 1825] put them out of business for about forty-eight hours, I think. The bursting of the fly-wheel affected an area rather limited in extent. We were particularly fortunate. It might have been very serious, but we were fortunate in not having it so. It did not affect the delivery of gas to consumers because we are so intersected that it does not happen. Since January 1, 1922 we have had no explosions or other accidents in any of the gas plants of the Consolidated Gas Company, including Astoria, which affected the delivery of gas to its consumers and I hope there never will, and that is one reason for our interconnection—it prevents, I hope, any such calamity. This bursting of the flywheel was not due to anything embraced in the manufacture of the gas itself. It was part of their manufacturing apparatus. It was one one of their blowing units, which, for some reason or other, the fly-wheel after its years of work just got tired one day and went apart. This explosion that occurred in the purifier house, is not a matter of frequent occurrences. It happened in that par-

ticular case when we were reviving some material in a box and there was a part of the oxide became heated and it was a mixture of gas and air and it blew the cover off. The cover went off into the air, and in coming down it did not come down so it fit the box just right. It fit the box in a wrong sort of a spot and broke the box. The result was that part of the apparatus was thrown out of commission for at least four months, affecting the capacity of that plant for that period of time.

[fol. 1826] I showed the plant could not have been out entirely more than eight or ten hours but the capacity of it was restricted for a considerable period of time. I would not say that that explosion was due to the carelessness of some employee. It was a spontaneous ignition of the oxide itself. There were no matches—anything of that sort, that was due to a spontaneous combustion. That is something that is possible in purifying boxes. As a matter of fact, we have only had, of that character, one since January 1, 1922. When I testified on my direct that I could not operate continuously, I meant that in any given plant all of the machines cannot be operated continuously and simultaneously. Some of the machines have to be let down for rechecckering, or for some other reason. There are other reasons than rechecckering which require the letting down of a machine; repairs to the lining. At times the linings must be renewed entirely, which will take several weeks. Occasionally there may be—you would have to take one of the sheets out of a generator and replace it with another sheet. That is, in keeping the repairs up. These things happen as we go along, and that work is all being done during the period when the load is comparatively low. We try to have the machines—all these major repairs made during that period, so that we won't be called upon to make them during the heavy load. It depends upon the plant if more than one machines is let down at a time for repairs. If it is a small plant, one, if it was a large plant—and so forth. It would depend, in a large plant you would have at least two machines down. For instance, a plant of twelve machines never at any time—that is, in the normal operation—could you operate over ten, and there would be many parts at that time when you would be only operating nine and a [fol. 1827] fraction. In other words, it would require two being down all the time for the purpose of repairing and

recheckering and keeping them in good operating condition. Of course, while they are under thos- repairs they cannot be operated at all. Now, that leaves 10 machines in operation; but during the day there is a minor repair happens to the machine, which would upset it for an hour, or another one for two or three hours. These things are continually happening. So that we never, in rare instances, can take a plant running six, seven, eight machines, and say that we get 24 hours' operation out of that number of machines under fire. We do not do it. Usually there are reports coming in every morning and sometimes it may be as low as thirty minutes on the full hour on the full number. At another time we may find another machine has been down, four, five, six hours. It may be that something is broken and it has to be repaired and it will take three or four hours to do it. Replacing the sheet is not a matter of frequent occurrence. It is just done when it is necessary. If you are on 650, recheckering will be oftener than it is now, 800 hours usually, 800 to 1,000 hours for recheckering the carburetor, and in many cases depending somewhat upon the condition of the fuel, the amount of ash we get in blowing over; but a superheater will go at least twice as long as a carburetor and sometimes longer. Of course, you understand the greater the quantity of oil that we put into the machine for the making of gas, the oftener checkering has to be done. When a machine is let down for rechecker- [fol. 1828] ing it is let down until it is recheckered. Under ordinary operation it would take from three to four days before it was sufficiently cooled in order to permit men to get in there to take the old checkerbrick out. I have known instances, however, where the demands were such and the conditions were such that we could not wait that long, and we put a fire hose in and cooled it in that way, which, of course, is not particularly good practice, but has been done in emergencies. When a machine is being recheckered it is absolutely out of commission for the time being. In 1922, as to how closely I came in operating to my maximum rated daily capacity in all of the plants of the Consolidated including Astoria, I could not tell the date, either in 1922 or 1923, and I would not undertake to tell you the date, I may have the record. That involves the keeping in my head of certain figures. I know that in either 1922 or 1923—I think it was 1922 that all the plants that were in

operation, and that included everything but the 14th and 72nd Street, that they all made their rated capacity; that is, there are times when you can do a little above the rating but I think that in some instances they were tried out just to see about how much they could, if they were being pushed—to see whether or not if we got into a jam we could get any more through them, using in some instances a greater number of machines than would ordinarily be used in normal operation. I cannot recall the exact figure, but I think that 11th Street made an average of 24,000,000. I think that they had, just for the test to see what they [fol. 1829] could do—I think they got somewhere between 28 and 30. I do not recall the figure. 21st Street, which at that time was rated at 28½, I think we probably made 32,000,000. 99th Street, I think, which was rated at 55, went up to 65. The others all went, to some extent, beyond the actual rating, but they were being tried to see just how much we could get beyond the normal rating, which was not, however, a normal operation. This happened on these various days, covering a period of time. I do not know what is the difference between what is known as rated capacity and actual capacity. I think it would be confusing. It seems to me the rated capacity and the actual capacity should be the same. I think it is very confusing to say "What is your rated capacity?" Your rated capacity ought to be what you can do day in and day out. That is what we would call a normal operating condition. That is, day in and day out during your maximum period, during the entire winter, that we would expect given a good class of labor and a reasonable quality of material, that we could produce the amount which we would call our normal working capacity. Now, other people speak of rated capacity which includes their entire equipment those machines that are down for repairs, and so forth. It does not mean anything, because, if you cannot use it, that is, when you want it, it is not a real capacity. It is something you can make figures on, but it does not get you anywhere. When I speak of rated capacity of gas making machines what I mean to imply is what I would expect to get out of that machine as compared with what the machine actually does [fol. 1830] manufacture during the course of 24 hours. There are times when you give a rated capacity of a machine—you see, under normal conditions, the rated capacity

of that machine, as I testified, I think, this morning that we put in certain apparatus which had a rated capacity of so much, that at a later time we found we could get so much out of that machine, which, of course, changed the rating. I probably got your question wrong, because there have been times that the question has come up, that is to say, you have so many generators. What is the rated capacity or the operating capacity of each individual generator? So much. You have so many. Then the capacity of that plant would be rated capacity times the number of machines which you have in the plant, which, of course, is not the case. You must understand these things must go down: as to what the capacities were of each of the manufacturing plants—I gave certain figures—were what the machines would actually produce, what the plant produced under normal conditions, the plant as a whole.

By the Master:

In other words, we do not take any individual unit or units in arriving at the capacity of a plant. It is whatever the smallest unit will handle or take care of. That naturally would be the capacity of the plant. If it were unbalanced—if you had an unbalanced plant—for instance, you might have ten machines which could make, we will say, 30 million, yet the balance of your plant might be of a character whereby you could only handle—pump and purify—only 15 million. Now, the capacity of your plant there would be 15 million cubic feet per day, although you would [fol. 1831] have generators which could make considerably more. That is an illustration of what an unbalanced plant would be, which we have not got.

By Mr. Donnelly:

I think that considerable confusion comes from the failure to make that distinction between the normal capacity of the plant under ordinary operating conditions and the capacity of the plant measured by so many machines of such a rated capacity. I cannot tell offhand what has been the increases in gas construction by Consolidated Gas consumers during 1922 and 1923 as compared with the period five years prior to January 1, 1922. It is all a matter of record in the books here. There are not any other

inter-company charges which are subjects of my determination, in the form of a report. There may be charges which might come to my attention. I do not recall any particular instance at the moment, though. The Consolidated Gas Company has consumers in the territory served by the Standard. It is possible and probable in some cases that there are mains of the Consolidated Gas Company in the territory served by the Standard to which are attached services for conveying gas to Standard Company consumers. It is not extensive either one way or the other. You understand how that would happen. It is simply a matter of conservation of resources, as it were. For instance, if there were two services in a building, one of the Standard and one of the Consolidated, of which there were more consumers on one service than there were on the other, and it was found that one of the services was being overloaded, rather than install [fol. 1832] an additional Consolidated service, if the Consolidated was overloaded, or, in like manner, if the Standard was overloaded, why, several meters might be taken from one service and put on the other in order to prevent the installation of another service to take care of that work. There would be a few cases. There would not be many but that would happen. That would be the natural order of things, where that could be done. We certainly would not undertake to spend money, either for that company or for this company or any other, if there was any way to avoid it. In the case of the Mutual before it was acquired by the Consolidated, there may have been an instance, in which case those services would still be in use and both be necessary, if there happened to be two in a building. In these jointly used facilities reports I have stated the ownership or the identity of the ownership of the Ravenswood and Astoria tunnels, as to whom they belonged.

The three per cent of unaccounted for gas that I attribute to slow meters and so forth is an arbitrary percentage. The cause of slow meters is because they do not run fast enough I guess. There isn't any real reason. Of course, you understand what we have are dry meters. They are tested and proven at 100, as permitted by the Commission. Any slight leak in the diaphragm—of course I do not know whether you understand the theory of a gas meter, or not, but it is simply made up of two bellows or

pistons which have a given volume, which move in and out. One moves out while the other is moving in (illustration). [fol. 1833] I cannot make my hands work *work* that way. It is in that shape (illustrating). Simply as a bellows. Those bellows go in and out, back and forth. And that represents a certain volume of gas. Now, if there is a slight leakage in these diaphragms, a pinhole, or anything that would develop, that passes through there, passes to the consumer while this is going on (illustrating with bellows motion). So whatever extent that leakage has been, to that extent the meter would be slow. In case there is any stretch of the diaphragm leathers, in any way, that, of course, adds to the volume which, however, is not compensated for by the dial in any way. In other words, if that has grown larger, when it makes that, it simply indicates one revolution on the dial, and if it becomes larger it simply records that one revolution, which may be a greater quantity than was originally intended when the meters were tested. Those conditions that I have described would nat*u*ally come about because the meter gets out of a state of repair. Of course, you cannot bring these meters in every fifteen minutes or thirty-five minutes, to find out whether they are right or not. Of course, in addition to the diaphragms themselves, you have sometimes a deposit upon the base of the valves themselves which tends to lift them a little and allow the gas to pass off in that way. Now, I do not think we ought to be criticized because our meters happen to run a little slow. If we did adjust them or brought them in every six months, why, that would be an added burden to the consumer, and at the [fol. 1834] same time the people would be paying for just one and a half or three per cent more of gas. The matter of meters running slow is one of frequent occurrence and we find some that do not pass gas, so, of course, when we get those, why, they are brought in because people do not get service. Then we had others, which, as a result of a break of some kind or other, do not register, in which case they may go along for a period of thirty days until the meter indexer comes around and takes the index of the meter, takes it back to the office, compares the consumption with the previous month's consumption and finds that there has little or no consumption taken place during that

month when the meter is brought in. We, of course, do not know whether the people have been there or not, whether they actually used the gas or whether it is a poor meter, but the meter is brought in in order to determine whether or not it is registering improperly and registering slowly. That, of course, is looked upon by the bookkeepers each month—that is, they make an analysis and a comparison of the gas used during the month as compared with the previous month and at times as compared with the same month of the previous year in order to check in that way to determine whether or not some of them have broken down. That does happen. Unaccounted for gas would be the result of slow meters. The amount of our unaccounted for gas we attributed to condensation, would not be much. I do not believe the actual condensation would run somewhere between a half of one per cent and [fol. 1835] one per cent, and that, of course, would depend upon atmospheric conditions. But I do not think the entire unaccounted-for due to actual condensation would be in excess of one per cent. In other words, I have undertaken to try and find out by recording the amount of drip in the form both of water and oil that we have recovered from all our drips on the street, to make an analysis to see how much that was and see what that would represent in gas. The water, which at one time was a gas or vapor, and I have never been able to find it was over three-fourths of one per cent. I think it is less than that. The condensation being due to the temperature at the plant at which your gas is passing through the mains. Temperature naturally affects those things, and it is due to that and friction—friction losses. In other words, passing gas through a main quite rapidly, even at the same pressure, there is a friction loss from coming in contact with the sides of the mains which tends to reduce the vapor tension of the gas itself. That condensation occurs in the mains, services, meters, wherever there is the effect of a reduction in temperature, if the gas has not been subjected to a lower temperature at some previous point, then you will get a drop of some liquid. It would either be water or oil. Of course, there would be some in mains, but not to such an extent as one might imagine. You get it in every service. Many services passing through airways that are practically

exposed to the atmosphere. That takes place in the service [fol. 1836] itself. The service itself, however, drips back to the main, so that whatever drippage—whatever condensation is formed in the service goes back into the main and from there it runs down into the drip and is passed out; so that the drippage or condensation which we collect from the main is not entirely from the mains. In fact, I should think that the greater part of it was condensation from the services going back into the mains. I would not undertake to say that the amount of condensation that occurs in the mains is very slight. It would depend entirely upon the depth of the main and the temperatures to which the mains were subjected. The mains are laid at an average depth of about three feet. But that may vary anywhere from a foot and a half to six feet. There may be conditions when a main is laid that you cannot get down to three feet. Condensation does not arise from improper caulking of the joints in the mains. That has no bearing on it whatever. That would affect leakage, but it would not affect condensation. I attribute our loss of gas to entirely leaky mains. There would be leaky joints or broken mains. We have broken mains. At the time the services were being put in there was a certain amount of loss, a certain amount of condensation. It is an arbitrary figure. We have no other means. My best judgment is that, taking the conditions such as we had last year, such as we have had this year, I should say that three per cent attributable to meters was sound. I would also say that two years ago, when we had colder weather and a shortage of coal, that the three per cent was low. In other words, our unac- [fol. 1837] counted for was higher than it is at the present time, due I think entirely to the fact that the meter registration at the consumers' premises was less than is ordinarily the case. And I think under those conditions, which were abnormal, we could safely have used a figure of four per cent for losses due to consumers' meters rather than three.

By the Master:

We would have to know the condition of every consumers' building to state definitely what were the facts as to the

exact percentage of the loss of gas attributable to any one cause.

By Mr. Donnelly:

Some lost gas is due to damage to our mains by street contractors; at times. And also through corroded services at times taken care of. We have leaks on the street. I do not recall the date when the main mileage basis has been the factor by which has been determined the portion of the gas lost among the Consolidated and its subsidiary gas companies. I recommended I should say six or seven years, and I am not sure that that is the exact time. Whatever it was, that was a change from a somewhat different method that had been in use prior thereto. Before that we assumed a certain unaccounted-for for each company at the time they went into the system, that some had six and some had seven and some had eight, it was allocated to these different companies because they were being jointly used, so that we could not definitely state what any one company's unaccounted-for was. The allocation was arbitrarily stated. When you came into the combination or into the Consolidated Gas Company, your unaccounted-for was X per cent, and we would continue it as that, and that was continued for some period of time, the Consolidated Gas Company [fol. 1838] holding the bag and taking the difference. I think it was myself that made a recommendation—I did not think that it was sound—that inasmuch as all the mains of the system were being practically taken care of by immediate supervision of one or two individuals, that there ought to be some logical allocation as to the proper charge for this unaccounted-for gas. As I said, inasmuch as the Consolidated Gas Company has a greater sale per mile of main than any of the other companies, then naturally, the inference would be that their unaccounted-for gas would be less, because in sending 100,000 feet through a line of pipe you have a certain unaccounted-for gas or a certain number of feet as leakage. Now, you may put through that same line of pipe 200,000 feet of gas, and the leakage itself, assuming that the pressures were the same, would be no more; but, of course, the percentage as compared with the amount that went through would be infinitely less, and it was based upon that that in my judgment that in so far as the consumers'

meters were concerned they were on a parity and that I thought as of that time and I think as of this time that 3 per cent was a proper allocation for consumers' meters and to be allocated to the different companies on the basis of their sales of each company to the total sales, and whatever remained as left was divided among the companies based upon their main mileage; that is, the main mileage of each company to the total mileage, which would mean that I still think—I know no other way—it may be wrong, but I be- [fol. 1839] lieve it is reasonably correct. I find a greater percentage of unaccounted-for gas for the years 1922 and 1923 than I have for say three years prior to 1922 and I do not think there is any material difference except for the fact that, as I said a while ago, it is a matter of the registration of consumers' meters. I think that is what affected it, and I think our unaccounted-for gas for the year 1923 is too low as to what actually happened. The unaccounted-for gas in 1922, I think, was a little bit too high. Now, the reason I state that is because in the winter, in the last 15 days of 1922, you had extremely cold weather requiring us to make a considerable quantity of gas whereby the sales were reflected in the month of January, so that we had that large make but we did not get the corresponding sales because it went into the following year. Now, we would have been all right this year if we had had cold weather during the last 15 days of December but instead of that, it was not, so that to that extent our unaccounted-for gas this year, I think, is from—well somewhere between ¼ and ½ of 1 per cent lower than the actual unaccounted-for was. It is—I have forgotten the figure—but I think the Consolidated was about 4.34. I think a better figure would have been around 4.80. I do not make the apportionment of the unaccounted-for gas among the companies. It is a matter of calculation. I do not have to make it. I recommended a formula. I recommended some time ago that I thought this was a reasonable way of allocating unaccounted for gas, and since that time it has been done that way. The calculation is [fol. 1840] done by the Accounting Department, some department or other. The main mileage is given to them each month of each company, and from that the sales and used of each company are also given to an individual or individuals who make these computations and notify each of the companies what their total requirements were for

that month. The main mileages of the several companies in the system are reported to the Consolidated by each of the respective companies. That includes both transfer and distributing mains. It includes our distributing system. Mains actually in use only. It does not include abandoned mains or mains withdrawn from service, that would not be an active main. The Standard Gas Light Company may take gas from Astoria. That is, they buy facilities from the Astoria Company—pay for facilities from the Astoria Company, and there are times when they may purchase gas from them, but, the same thing does not hold true of the New Amsterdam Company. As to taking gas from Astoria, the Amsterdam Company is a seller of both gas and plant. The Central Union takes gas from Astoria. I say "it does." It may at times. The Central Union Company is a buyer of plant from the New Amsterdam Gas Company, but there may be periods during the year that they may purchase some gas from the Astoria Company. The gas from all companies is delivered into a general transfer system and then from there delivered to the consumers of those companies that needed it. It was all taken out of one pot. In so far as the Standard is concerned it may or may not get it by means of the Astoria tunnel. If it were getting [fol. 1841] gas from the Astoria, it would get it that way. The probabilities are there isn't any question but what some Astoria Gas is furnished to the Standard consumer. I can state that as positive. The same thing holds true of Central Union, that when Central Union takes gas from Astoria the means by which gas is conveyed is the Astoria tunnel, and they pay for the use of it.

Gas appliances are sold directly to gas consumers in the City of New York by appliance manufacturers, by department stores, by plumbers and by others.

To deliver gas of 650 b. t. u.'s to all parts of the district would require 4.7 gallons of oil per thousand cubic feet. I am speaking of any or all plants. I think the average quantity of oil required on the water gas proposition to deliver a gas of not less than 650 b. t. u.'s to any point on the district would take not less than 4.7 gallons of oil, covering a period of one year. I think I testified to 4.4 in the Bronx Gas and Electric Company case, but in my direct or cross examination I said that I assumed that that

would be tested—one half gallon I think I used in the Bronx case, as tested within one mile from the manufacturing plant, where the testing stations are as of to-day, and I would testify today in so far as the Consolidated Gas Company is concerned, if the gas were tested within one mile of the works I believe that we could get along with 4.4 gallons of oil. I based my testimony of 4.7 gallons of oil per M. cubic feet on the fact that there was going to be a considerable drop beyond the mile limit, and it would take three-tenths of a gallon of oil additional per thousand feet [fol. 1842] in order to keep it up to not less than 650 b. t. u.'s per cubic foot.

I am familiar with the various processes of manufacturing gas. If we were permitted to make 537 b. t. u. carbureted water gas, as provided by the Public Service Commission order in Case No. 108, assuming the plants that we have and the quantities of material now available to us, it would be not very different than if we were making 650 b. t. u. gas, except that the cycles would probably be a little bit shorter and that we would inject a lesser amount of oil into the straight blue water gas than if we were operating on a 650 b. t. u. standard. In other words, the operation could be exactly the same. It would probably require a longer blow in order to maintain the temperatures in the carburetor and super-heater at a 650 b. t. u. standard than would be required on a standard of 537. The cycle, therefore, would be somewhat less. That would be the only real difference aside from the fact that during this period of run we would put in a lesser quantity of oil per thousand than would be the case when making the 650 b. t. u., and our recharging would be less than the 537 than it would be on the 650 basis. That would be the only difference. We would use some additional amount of coal at 537 than we would at 650 for generator fuel. More for 537 than for 650 because it would have to be the same amount of oil or gas and that would have to be compensated for by a slightly additional amount of blue gas which is produced from the use of coal in the generator in order to make up for the dif- [fol. 1843] ference in the quantity of oil used we would have to use some additional coal, to an extent. I cannot say what the exact figure is. I think it is around—to the best of my knowledge now, and I may be wrong, around 3.7

gallons of oil; and that anything less than that in the gas required an additional quantity of generator fuel; that anything beyond that makes no difference whatever. That is, if you were using 321/2 pounds of fuel and using 3.7 gallons of oil, that your generator fuel would be 321/2 pounds if you were using four and a half gallons of oil, on account of the longer time required to blow to keep the carburetor and superheater sufficiently heated to decompose the oil. Getting below 3.7 gallons and I am not absolutely sure that is the exact point for any losses sustained from the lesser quantity of oil introduced into the gas, requires an additional quantity of fuel from the generator to make up this oil gas loss. All this applies to water gas manufacture. As to our Astoria Works, I do not recall the exact b. t. u.'s of coal gas we would normally make there if we were operating as we did in 1923, but I should say they were around 575 b. t. u.'s per cubic foot of coal gas, and in an operation of that kind where we were making a mixture of coal and water gas, where the coal gas had a b. t. u. content of 575, we would make a water gas of a b. t. u. content less than 537. Just how much would depend upon the proportion of coal gas and water gas being made. In other words, so that the combination of the two would produce a gas of 537 b. t. u.'s. [fol. 1844] As coal gas plants we have at Astoria plants A and B. For plant A for 1923 it may be about 580 b. t. u.'s; I did not recall the figure. I used an average of around 575 at plant B and do not recall the figure. If we were required to deliver no more than 537 b. t. u.'s on the average at the testing station, it would not follow that we make water gas weaker than 537 b. t. u.'s per cubic foot in order to dilute the higher quality of gas; that would follow where you had mixed coal and water gas plant, if the coal gas was in excess of 537 in order to bring that down to an average of 537 naturally the water gas must be less than 537 to produce that condition. Blue water gas, that is gas without the use of any oil and mixed it with crude coal gas, could be done. We have made blue water gas in the old days of the Tessie de Matay. That is the way we made it—made straight blue water gas, which has a heating value of about 300. If we mixed 80 per cent of coal gas such as made at the coal gas plants in Astoria in 1923, with 20 per cent of blue water gas, introducing the blue water gas

into the hydraulic main of the coal gas plant, the average quality of the resultant gas would be a question of calculation. I could calculate it. I do not see what bearing it has whether we made 80 per cent. coal gas and 20 per cent. water gas, when, as a matter of fact, our proportions of coal and water gas are so much the other way, that we have 20,000,000 of coal gas and 66,000,000 of water gas. However, I can answer that question. It is simply a matter of calculation. It would have no bearing on the matter. That could be determined by a mere mathematical x calcula- [fol. 1845] tion of the number of feet of each quality of gas and the number of feet in each quality. If you want to calculate it, assuming 575, multiply that by 80. That would give you some figure. And then you would take 20 and multiply it by 300. That would give you another figure. And then if you added the two together that would give you the b. t. u. in 100 per cent. In other words the answer is the mathematics that I have just described. Any one can do it just as well as I can.

I have familiarized myself with the process of making gas in which blue gas is introduced into the hydraulic main of a coal gas plant; that has been done years ago and discarded half a dozen times. In other words I have experimented with that system and discarded it. That was a proposition that was developed at least 20 years ago—an English proposition that was developed whereby they expected to get results by putting blue gas in the hydraulic main with the coal gas in order to prove that the combination of the two was more than either one by itself, which in practice does not pan out. I think it was an English attempt. In other words, they felt that if they put the blue gas in there it would hold and carry some of the hydrocarbons which were condensable under the other conditions, and it was felt that that tended to improve conditions. It was never demonstrated that it was of any particular value and I do not think it is being used any place in the world today. I don't know that we ever made any very great experiments on it. I followed it and I have read reams of literature on the subject, on the pros and cons of it. I don't [fol. 1846] know as we ever made an experiment, because we were not particularly interested in reducing our coal gas to any lower b. t. u. than we had to, because that would

mean a return to the old days. We would simply have to put more oil in and bring it back again. It was a matter of interest and might be made a matter of interest now if we were on a very low b. t. u. gas, just as a complete carbonization of coal would be a matter of interest if it were possible in this State, which it is not, even under a 537. I don't think that I actually did make experiments. I don't recall that I have. If I did say that, it was a slip-up. I am familiar with the plan in use whereby steam is introduced into the incandescent carbon of a retort in which there is above the carbon coal in the process of being carbonized. These things only apply when you are operating on a low b. t. u. content. Otherwise, they are of no value whatever. They apply only when we are operating on an extremely low b. t. u. content. For instance, taking the practice, when you get down as low as 450 it tends to increase volume, to increase capacity a little bit. The b. t. u. cost, one way or the other, does not make much difference whether you put it in or leave it out. Other people instead of putting in blue gas, put in a little bit more inerts. In other words, they put in something which has volume but which has no heat value. However, the State of New York limits inerts to 15 per cent, so that instead of putting inerts here they must put in some combustible gas. They are making a straight blue water gas in a retort of some kind in connec- [fol. 1847] tion with the carbonization of their coal. That is being done sometimes on intermittent verticals to some extent. To a greater extent on continuous verticals. I think in some recent coke oven installations it has been attempted, but I do not think they know just what results they have gotten today. Naturally, it tended to increase volume. It would be a mixture of coal gas and water gas. It tends to increase the volume, and tends to increase the capacity of the apparatus in that after all the volatile matter has been driven from the coal they have nothing there but incandescent coke. For a period of time, depending upon the type of apparatus and the period of charge, they put steam in at the base of the receptacle, retort or oven, whatever it may be, and allow the steam to pass through the hot coke. Exactly the same proposition as in making water gas, whereby the steam is decomposed into hydrogen and carbon monoxide, combining with the coal gas that has been made. In

other words, instead of making 11,000 cubic feet from a ton, by that method they made twelve and a half or thirteen thousand cubic feet.

[fol. 1848] New York, May 9, 1924.

Met pursuant to adjournment.

GEORGE E. WOODS, a witness in behalf of the plaintiff, resumed the stand.

Cross-examination by Mr. Donnelly:

I have visited the vertical retort plant operated at Rochester, New York, and the adoption of vertical retorts have been considered in connection with the proposed plant at Hunts Point. I am familiar with the coke oven system of making gas. I personally have not inspected the latest coke oven plant erected in Chicago, the small installation that they have there of ten Baker ovens. I personally have not made an inspection of them, but I have had an inspection and report made at those ovens within the last six months. I do not recall the quality of gas that is made in Chicago. I have a record of it here if I can locate it as to the b. t. u. content. I might show whether it is 570 or 600. [fol. 1849] I see from the reference I have here the standard in Chicago or the standard in Illinois is a minimum of 530 with a maximum of 565. The question that you ask cannot be answered. The question, as I understand it, is addressed to coal gas and how much oil would be required in the water gas to make a delivery, of 535 b. t. u. gas on the district at the testing station a mile from the company's works, mixed with the coal gas. No one could answer that question unless they knew how much coal gas was being made, what per cent of coal gas and what per cent of water gas. I have investigated the operations of the Peoples Gas Light and Coke Company, of Chicago, which operates under a standard of 535 b. t. u.'s per cubic foot. I don't recall at the moment what the oil was. If I had the per cent of coal gas produced or the b. t. u. content of that coal gas produced, then I could make a calculation and state to you what in my judgment would be the amount of oil required to produce a mixed gas upon the district of not less

than 535. Unless I had those facts I could not answer at all. I don't know what they used. Jersey City operates on a monthly daily average of 525. I know of some plants operating on a greater quantity of oil than others. Just what the amount is, I do not recall. Of course, we have never delivered any 537 b. t. u. gas on the district. From the tests that have been made on the 537 b. t. u. gas in practical way at the 99th Street station—we have made experiments with 537 b. t. u. gas there, a year ago or a year and a half ago. We did not deliver that gas to the consumers. We mixed it with other gas. In delivering 537 b. t. u. gas to the testing stations at one mile from the plant, I think under normal weather conditions, the drop in 537 b. t. u. [fol. 1850] gas would be from a half to two per cent. under normal weather conditions. Of course, we could not make tests under those conditions, because we have never delivered 537 b. t. u. gas on a test a mile from the plant. We have never made a test of the drop between our manufacturing plant and testing station. Outside of what we have been actually doing we have not made any tests on 537 b. t. u.'s. I simply state in my judgment the range would be from a half to two per cent. I think at times it would be less than that. You find that, running from 575 to 580 b. t. u.'s, that at certain periods of the year there is little or no drop in the b. t. u. content. Of course, where we were operating on the 22 candle power standard there have been times that it required an amount of oil to produce a 22 candle power which at times was 650 b. t. u.'s. The average oil required to produce a 22 candle power gas is 4.1 gallons of oil, which means an efficiency of 160,000 b. t. u.'s per gallon in order to produce about 650 b. t. u.'s per cubic foot. So, when we were delivering gas of 22 candle power, our average b. t. u. content was about 628. I would say the range was somewhat above that—the range was from 610 to 650. The quantity was 4.1 gallons of oil to manufacture and deliver gas of 22 candle power a mile from the plant.

I stated in producing 22 candle power we used on the average during the year 4.1 gallons of oil. I have so testified here, that in my judgment to produce a gas of not less than 650 b. t. u.'s on all parts of the district, it would require 4.7 gallons of oil, or an increase of six-tenths of a gallon, which would produce an average greater b. t. u. [fol. 1851] content than was produced by us than when we

operated on the 22 candle power standard. As I understand, in compliance with the law we would be required to produce 650 b. t. u.'s on any and all parts of the district—not less than 650. If we were required to make gas at Astoria which would deliver to the consumer 650 b. t. u.'s per cubic foot as the minimum, the quality of gas we would make during each month of the year, assuming the average temperature conditions in New York City would depend on the proportion of coal and water gas that we make. If we were making any considerable percentage of coal gas, our water gas would be, during all parts of the year, in excess of 650 b. t. u.'s per cubic foot. The gas from Astoria would have to travel in order to reach the consumer most remote from the plant at Astoria, on the Northern Union District it would be something—by the pipe line—over 12 miles and on the Consolidated it is 10 miles. In making gas at Astoria which we would be required to make if we were to deliver 650 B. t. u.'s per cubic foot to all consumers, we would be required to use 4.7 gallons of oil per cubic foot, the straight water gas. If we were making coal gas, the amount of oil required on the water gas for enriching or increasing that coal gas from 575 to 650 b. t. u.'s say, the quantity of oil used to produce that particular amount of water gas would be considerably in excess of 4.7. I should say it would be 5¼ or 5½ gallons, depending upon the portions of coal and water gas that you manufactured. In de- [fol. 1852] livering 650 B. t. u. gas to each and every consumer, it would be possible for us to make enough water gas at Astoria to enrich the coal gas made at Astoria. In doing so, however, it would be uneconomical. In other words, the quantity of oil required to gasify would be such it would not be an economical operation. In making our calculations of the cost to produce water gas that would deliver to the consumers 650 b. t. u.'s per cubic foot, we would make it with the quality of oil, such as is being used by us, but you would produce the quality at the expense of efficiency. Assuming the most unfavorable temperature and pressure conditions with which we had to contend in New York City, during the winter of 1923-1924, I do not know what would have been the highest heating quality of the gas made at any of the Consolidated Gas companies water gas plants in order to deliver to the consumer during such winter a minimum of 650 b. t. u.'s per cubic foot, it

would have been quite high. We did not produce that and I would only be assuming a condition, but I am quite sure the oil would have been largely in excess of five gallons per thousand. In making our calculations as to the cost of delivering the minimum of 650 b. t. u. gas per cubic foot during the most severe weather that we experienced in the winter of 1923-1924 the heat loss actually *be* between the inlet and outlet of the compressor, would not be great; that is, putting the gas into the transmission mains is not under excessive pressure. There would be some slight drop as a result of pressure. In other words, our transfer system is not a high pressure system. The highest pressure we [fol. 1853] maintain in the transfer system is not in excess of a pound and a half and in other parts it is down to zero, so that one partly compensates for the other. There would be a drop which I would not undertake to say. I have testified that a gas with such a high volatile content is subject to dropping out at all times. Under the same conditions, I do not know how much loss we did assume there would be in the heating value of the gas leaving the compressor and before reaching the consumer most remote from the compressor. We did not do it. I can not state just how much the drop would be. I do not know whether the oil would be 5⅛ or 5¼ gallons and the difference between 5½ gallons and what would be ordinarily required would indicate that drop. Our system of calculating the carrying charges of the manufacturing plants would not be charged if we assumed that we would be required to deliver a minimum of 650 b. t. u.'s per cubic foot of gas. The plant facilities are based upon the capacity of the plant and the charges to the various companies are based upon the ratio of each company's demand to the total demand on those particular plants. If the result of the 650 b. t. u. gas—if the result was to reduce the capacity of each and every one of our plants, why automatically the charges for the use of the joint facilities would be exactly the same as they are now. If we were compelled to give gas of 650 b. t. u.'s, I do not think the service would make any difference; in so far as giving them their requirements, I think it would affect the cost of the Astoria to a somewhat greater extent than the plants operating plainly as a water gas proposition, due to the fact that the coal gas would have a b. t. u. content of [fol. 1854] 575 and would require a greater amount of oil

at Astoria to bring the gas to 650 b. t. u.'s. In other words, the Astoria water gas plants would probably be less efficient if we were to furnish to the consumers gas of 650 b. t. u.'s than the other plants where they were not compelled to enrich a low b. t. u. gas; that would be the effect because they would be called upon to gasify a greater quantity of oil produced at Astoria than would be the case with the water gas plant alone, and therefore more expensive. Of course, if we were producing a 650 B. t. u. gas day in and day out to each and every consumer, theoretically we should use a lesser quantity of gas than you would at 550. In practice that does not apply. It does apply to some extent for industrial purposes but for cooking and so forth, there would be little or no difference. However, if you have a variable b. t. u. content, then the efficiency is going to be such that the consumption under those conditions in my judgment would be just as high as it would at a 550 b. t. u. gas. Assuming we had stored in our Astoria holders gas that was furnishing to the consumers 650 b. t. u.'s per cubic foot, with an atmospheric temperature of 30 degrees Fahrenheit and the atmospheric drop was 15 degrees in two hours, I do not know what that gas test would approximate when it reached the burner of the consumer most remote from the Astoria holders; there is no way of telling. As a matter of fact, if a gas of 650 b. t. u.'s at the Astoria plant—the delivery of the gas at the most remote point and then there [fol. 1855] was a drop in an hour or two in the temperature, it would not make any material difference, because it would require a greater period of time than that to bring that gas down to the atmospheric temperature. The gas is not heated. The telescopic holders, that is, the three, four or five holders have water seals—that is, one section telescoped into the other, and those are heated—that is, the water in there is heated in the winter time to keep them from freezing, for the purpose of preserving the temperature of the water in the cup. That does not have the effect of preserving the temperature of the gas in the holder; that is not intended for that. It is for preventing the freezing of the cups which, if such a thing happened, and the holder went down, it might be, if they were frozen, they would jam and prevent the uncupping and would tend to rupture the holder. Assuming we have in the Astoria holders gas that would, under the prevailing temperature or atmos-

pheric conditions, furnish 650 b. t. u. gas to the consumers at a time when the atmospheric temperature was, say, 32 degrees Fahrenheit, I would not undertake to say what the quality of gas would be in such holders if we were attempting to furnish 650 b. t. u. gas. The assumption does not mean anything. If we were called on to do this, which [fol. 1856] I hope we may never be, the probabilities are that if we were operating under a candle power standard we would keep in touch with the Weather Bureau as to whether the weather was going up or down, and if there was any indication of cold weather coming on, we would start to increase the b. t. u. content of our gas so, when the cold weather arrived, we would hope that the gas was satisfactory at the time. Regarding the normal pressure that we carried at peak loads on the general transfer system on our general operation, there are times when there is a slight change, but generally speaking the transfer system at the present time never has a greater pressure than the greatest pressure of the holders. We have had boosters at times where we wanted to get gas into the transfer mains somewhat more quickly and force it into the transfer mains at somewhat higher pressure. I do not think we carry at any point over 30 to 40 inches. Referring to the normal pressure, I think I said from thirty to forty inches. I might qualify that. I have been thinking over it. There have been some times at our 63rd Street station where we have been as high as sixty inches on the transfer main. All gas that the consumers of the Consolidated Gas Company receive is not delivered through the transfer system. For instance, the Consolidated at 11th Street would send directly from their holder at the plant on to the system and on to their distributing system. In like manner, there [fol. 1857] would be some of the gas from the 21st Street plant that would go directly from the holder at the works onto the distributing system; the same would apply at 99th Street. We have a general transfer system and then one particular part of the transfer system which relates to the joint facilities. In other words, that part of the transfer system that is directly connected in a ring around, as it were, between the Ravenwood and the Astoria plants. There are certain joint facilities in the way of transfer of gases in connection with those charges that does not in-

clude the entire general transfer system in the joint facilities. I would not undertake to say what average quality of gas we would have in the holders during the month of December, figuring normal New York weather conditions during that month if we were attempting to make at 99th Street a gas that would furnish the consumer 650 B. t. u.'s cubic foot. In the first place, it would not happen, practically; that is, at a remote end of the 99th Street district—I would not know where they were, and as a matter of fact, it would be a mixture, largely speaking, of gases from the general transfer system and such as the 99th Street station sent out itself would be used quite largely in the vicinity of the 99th Street plant. If the gas went to an outlying holder—for instance, to the 111th Street, 132nd Street or the Kingsbridge holders, which are distributing holders on the district, then it would travel a very considerable distance, from 99th Street plant. Certain amounts of gas does go [fol. 1858] every day. Assuming the condition above referred to, viz:—that we could manufacture gas at 99th Street and deliver to the remote ends of the district and deliver a 650 b. t. u. gas at those remote ends, the consumers at or near the 99th Street plant would be using a gas very much higher than 650; at times in excess of 700. The greatest distance from any manufacturing plant of the plaintiff to any consumer on its distribution system is twelve miles in one case and 10.4 miles in another. There may be greater distances, but I think those are the greatest. The distance I gave a moment or two ago was from Astoria, that is where the gas would come from. Or if 99th Street sent their gas to the Kingsbridge holder—some of it may go there at times, into the Kingsbridge holder and then back into the Washington Heights district, it would be no shorter distance. I testified in the New York and Queens Gas Company case that the greatest distance from the manufacturing plant to any consumer on the lines of that company was about 9½ miles. The testimony that I have tried to state is that those would be the conditions when tested a mile from the plant. I have not tried to assume just what it would be at those remote points, because it is only a surmise and my judgment which, however, I think is fairly accurate. I think my testimony was that we would have from 665 to 670 in order to maintain a 650 b. t. u. at the testing station of the New York and Queens Company. It

would be a mile from the manufacturing plant. In other words I was speaking there of the New York and Queens Company plant.

[fol. 1859] During the winter ten to twenty degrees is normal; in the summer from seventy to eighty. I don't know therefore what you mean by normal temperature. I did not estimate the cost of furnishing 650 b. t. u. gas in June to deliver water gas of 650 b. t. u. minimum to consumers most remote from the plant where the gas was being manufactured. Taking the average for the twelve months of the year, in my judgment it would require 4.7 gallons of oil in water gas.

I recommended, in my report, dated December 18, 1923, that in computing the charge for the joint use of the Astoria Plant required for handling the Edison coal, the charge should be based upon the cost of the land and the equipment. The charge was not based upon the reproduction cost of the equipment or the market value of the land in the year 1923. It was taking the actual cost. I also recommended, that the charge for 1923 should be based upon the book cost as of December 31, 1922. The entire joint facilities report, that is, the value there, are based either upon book cost or upon an estimate of original cost. In some cases based upon the prices of 1914. In other words, none of the allocations of charges are predicated on present reproduction cost. If, however, we were permitted to get a proper return on gas at a price which would justify us in getting a return on the reproduction cost of our own properties, I would make a recommendation that for the use of joint facilities that they should also pay these companies for property at present reproduction costs. At the present time our prices for gas do not justify me in making any such recommendation.

[fol. 1860] If we were getting a fair return on our property, based on reproduction values and the price of gas was based upon reproduction values of all properties, in my judgment such properties that would be used by one company from another should pay a charge based on reproduction cost. Between December 31, 1922, and December 31, 1923, there were extensions to plant at Astoria made for handling Edison coal. That is, there was ad-

ditional equipment and the equipment that had been authorized was completed during the year 1923, and to the extent of some considerable amount of money. Whatever these expenditures were were allocated between the Astoria Company and the Edison Company on the basis of one-third and two-thirds. The joint facilities report for the year 1923 was based upon the expenditures as made of December 31, 1922, and such expenditures as have been made since that time have been borne by the Astoria Company without charge to any other company, which charge will not be made until the end of the following year. In other words, when we make out a joint facilities report, such as Astoria, we determine the capital account as of December 31st, whatever the year may be, and the allocation of charges to the other companies is based upon that investment as of that time. Any investment made by these companies during the next year, in so far as joint facilities report, is not taken into consideration until the end of the year; so that during a portion of the year these companies are carrying a part of their investment which they have put in during the year for which they are not recompensed [fol. 1861] by other companies until the following year. The Astoria and the Edison Companies are a sort of a different proposition; that is, that is something between the Astoria Company and the Edison Company. The Edison Company, in so far as this is concerned, the joint facilities report, we were deducting a certain amount of money as not applicable to the gas business for which, inasmuch as the Astoria Company was a manufacturing concern and sold practically all of its products to other companies, we deducted from the investment in making the charges to the other companies for the use of that property. My report, Plaintiff's Exhibit 760, carries us down to December 31, 1923.

Whatever expenditures were made in 1923—if these expenditures had not been made prior to December 31, 1922, would not be included or charged to the other gas companies using the joint facilities. Even if made during the year 1923. At the end of 1923, December 31, 1923, however, then we determine what investment we had and had been made during that year, and whatever that investment

was, was then allocated to the various companies on the basis of their requirements. In other words, there is a period of time, if I may explain it, that we may start construction work in March, April, or May, a certain amount of money, that that might not be completed until September, October or November, and put into use. For that period of time, from the time it was put into use until the 31st of December, the Astoria Company would get no return for that investment during that period in so far as another gas company was concerned, but it would get its return from the New York Edison Company because they would [fol. 1862] pay on the basis of the expenditures each month. You see, we make this up every year. We could make this report up and allocation of charges, we will say, for the year 1923—we could make this allocation on the first of March and say, "During this year the charges will be so much." We find as of December 31st, our investment is so much and the allocation of these charges is based upon that investment, and during the year whatever expenditures are made are not taken care of until the 31st of December of the following year and the theory that the construction that is going on is not completed, is not used and useful to the other companies until it is completed and in operation, and until such time as the Astoria bears that expense, which may be two or three months of the year, which they carry, and then it is put in their investment at the end of the year and allocated to the various companies on the basis of their demand on the following year. What I just said does not apply to the New York Edison Company arrangement. The Edison arrangement is a monthly arrangement and that is a different proposition, except in the report it shows the expenditures, one-third of which is allocated to the Astoria and two-thirds to the New York Edison Company.

As to the method used by the Astoria, Light, Heat and Power Company in 1923 of charging for repairs to the equipment used at Luyster Creek for handling the Edison coal, that would be a direct charge to the Edison Company as the expenditures for the repairs were insurred and based upon the tonnage of coal which came over the dock, and would be allocated on the basis of tonnage. In other

words, the apportionment is based upon, that the Astoria [fol. 1863] Company will carry one-third of the investment and the New York Edison will carry two thirds of the investment, but that repairs and such matters as that will be allocated between the two companies on the basis of tonnage received by them during any period. In other words, if we had a repair account of $3,000, and the Astoria Company during that period handled 1,000 tons of coal and the New York Edison Company 2,000 tons of coal, the allocation of that repair account would be $1,000 to the Astoria Company and $2,000 to the Edison Company. It is a recommendation made by me and an agreement entered into between the Astoria Company and the New York Edison Company. In other words, we sat down and thrashed out what was a reasonable and proper and fair charge to both companies. The equipment for handling the Edison coal is power-driven. Electricity is used and that is allocated also on the same basis—on the tonnage of material handled, and that is how you get at the cost of the power used in operating the equipment used for handling the Edison coal stored at Astoria; on the tonnage basis. I cannot tell you what the amount of the carrying charges was that I recommended should be made against the New York Edison Company in the year 1923 for the investment in property used partly by it at Astoria for handling its boiler coal. It would be a return upon the investment, both on land and plant, whatever it may be, of 8 per cent, and as I recall now, the allocation would be made, that is, as to repairs, renewals, and so forth, based on the tonnage of coal coming over the dock.

[fol. 1864] I do not think it was 8 per cent return and 4 per cent to cover taxes, maintenance, repairs, insurance and retirement expenses on the Edison. I am not sure about that, but, I think not. We had two or three ways. But the repairs account it was believed was going to be to a greater extent than that, and I think we changed that and made the actual repairs as to what they were going to be. That is my recollection of what was the final arrangement on that Edison proposition. There is an apportionment of the taxes in there, it would probably be ten and a half per cent representing taxes and—return. Two and a

half per cent for taxes. I cannot tell you what was the actual amount of the taxes on the land and improvements used for the benefit of the Edison Company in 1923, it would be allocated on the basis of the allocation for the entire property and the requirements that they had there; that is, the land tax. What actually happened in the year 1922 is that there was allocated for the use of these facilities to be jointly used between the New York Edison Company and the Astoria Company an area of land of about 940,000 square feet. Up to December 31, 1922, there was about 200,000 square feet which had not been put into use and could not properly be charged as of that time to the New York Edison Company; so that we made up a figure on the basis of $936,000 which figured about 30 cents per square foot, and I made a charge in my joint facilities report—I took 200,000 square feet or $60,000, off that property and still said it was being used and useful for the gas companies during that year. Since that time that has been [fol. 1865] turned over to the equipment of the New York Edison Company and the Astoria Companies jointly. I could not tell you what the actual cost of the maintenance and repairs was on that equipment in 1923, but, whatever there were they have been allocated on the basis—those repairs were held up for some extended period of time before we came to an/ arrangement as to just how they should be charged. That would be handled in the ordinary course of business to the repairs and would be properly charged. In the 1922 charges there was no charge made—that is, the allocation was only made during the year 1923 and not in 1922. In 1922 there was some work going on. In other words, the work had been authorized in 1922, and the work was completed, or partly completed, for partial operation, in about August, 1922. We were at about that time receiving coal from England and also from some of the southern ports, so that whatever improvements were made during the year 1922 were made solely by the Astoria Light, Heat & Power Company. There was no coal taken over the docks for the Edison Company until April, 1923. We made the allocation of charges, commencing ours as of Jaauary 1, 1923, but the actual use of the property by the Edison Company started in April, 1923, but our allocation was upon

the assumption that they began on April 1, 1923. We allocated the charges January 1, 1923, so far as taking that out of the gas property is concerned. There was no occupancy at all by the Edison Company during any part of 1923. I do not know where we could get the actual cost [fol. 1866] of the maintenance and repairs to that equipment in 1923. I suppose the books of the Astoria Company would have it. Just what book it is I am not prepared to say. I have not any figures here. As to the actual cost of insurance upon that equipment in 1923—I have not the figures here. As to the actual retirement expense on that equipment in 1923 I do not recall just whether there was any or not. It would be a rather short period of time to have retirements. There were many repairs made, but I do not recall that there was any retirement made.

If my recollection serves me correctly, we have no 1½ cents retirement expense in so far as it applies to Astoria. I think it is ½ per cent, per thousand, which is an operating cost applicable to retirements. In so far as that portion of those facilities used by the Astoria Light, Heat and Power Company is concerned, it would be applied on that half of 1 per cent per thousand, which applies to the company as a whole. I do not think we would undertake to set up a retirement on that particular thing except to keep track of it so as to bill the Edison Company for their proper charge for any retirement or any repair that might take place. And that half a cent is half a cent per thousand cubic feet manufactured and they sell practicallly all they make there. I do not think I can answer the question very well whether actual cost of retirement of the equipment used for handling that boiler coal in one year is an accurate guide, to the actual loss in wearing value or to the service life of the equipment that was used for the benefit of the New York Edison Company, because you sort [fol. 1867] of mixed up retirement and repair. You speak about the service, etc., but, I do not think retirement would have anything to do with the general repairs that would take place as the result of operation. It would be a repair account and not a retirement account. That equipment was painted during the time the New York Edison Company had joint use of it but I do not know whether it has been painted more than once. It had one or two coats of

red lead and a coat of oxide. I do not think there had been any painting since its original installation, except a small spot here and there. I would not undertake to give you an estimate on the cost of doing that work. That painting, etc., was included in the original cost of erection. That would be part of the original cost, the paint put on then. That would be included in the cost of the whole completed job. Afterward it would be in the repair account. I do not know whether the cost of painting that equipment is more or less than the extra annual cost of repairing it. It has not run long enough to tell. I do not know how high the particular structure is that handles the coal of the New York Edison Company. The peak of the hoisting tower is quite a height. That class of lofty, movable, mechanically operated equipment does not take a higher insurance rate than fixed property such as the retort house. The liability insurance covers the whole plant and it does not make any difference whether they are working there or some other place. The exact amount of the insurance which should be paid by the Edison Company as its share [fol. 1868] of the cost of insuring equipment used by it, would be based upon whatever the insurance rate was. Whatever the insurance rate was, they would bear two-thirds of the rate, based on the cost of that property, the cost of the plant. Two-thirds and one-third is the basis of apportionment, on capital accounts. That is the actual operation of handling material and in the matter of repairs it would be based upon tonnage—in other words, upon usage. That is because it was expected that they will use two-thirds of the area and probably handle about two-thirds of the amount of coal to be handled over their dock. They have not as yet used three-thirds of the area. They never have used a greater percentage than two-thirds of it. I could not tell you how many tons of coal were unloaded and handled by the equipment at Astoria for or on behalf of the New York Edison Company. I have not the record. There is such a record. I suppose the Edison Company and the Astoria Light, Heat & Power Company have it—the amount of coal coming over the dock and the amount going back. They have probably some original records at Astoria in the accounts. The actual quantity is probably in the accounting department in East 15th Street. I do not know when we last put coal in this pocket at Astoria

for the Edison Company. They may have put it in yesterday or today. I have not been there this week. That is a constant operation. Coal coming sometimes daily, and then there may be a spell when there is not much doing for a while. They have reclaimed from the stock pile and reloaded some of the Edison Coal stored at Astoria. We [fol. 1869] have not had occasion to shift any part of the coal of the Edison Company stored at our Astoria plant, except to reclaim it, that is, take it from there to another point. We have had to remove some of ours as the result of spontaneous combustion in the coal pile. I do not know how much coal was actually handled by the same equipment for the Astoria Light, Heat & Power Company. I do not know, but, whatever the amount would be, either one or both companies would be charged the proper amount one-third and two-thirds on the capital account and the actual charges of operation are based upon the tons of coal handled by the two parties concerned.

As to the detail of how I arrived at the amount $923,-224.82 in my report of December 18, 1923 which represented the assets of the Astoria Light, Heat & Power Company invested in said plant and equipment at Luyster Creek, used partly for the benefit of the New York Edison Company, I do not know how much detail I have on that. If it is $924,000, that amount represents the amount actually spent for equipment. The land value was taken as of a date when that was taken over by them, and the average cost was ascertained on the Astoria property, per square foot, and the cost to put in such stocks, etc., that they had, and on that the basis of the average cost per square foot of land was ascertained. It was then found that there was going to be some 900,000 square feet to be used for those two companies, and then in addition to that, having allocated this land and its cost, there was a certain amount of new docks to be put in and dredging done to complete the work, which was capitalized and charged on the basis of one-third to the Astoria Company and two-thirds to the New York Edison Company. A part of that charge, $923,-[fol. 1870] 000, is partly on the original cost of the land used for that purpose, plus the improvement made on the land itself in the way of bulkheads, dredging, etc., to make it operative, and the balance was the actual coal-handling equipment. That represents the land itself, represents the

actual cost of that property to the company, plus such additions as were made to the land—that is, in the way of bulkheads, etc., for and in the interest of the Astoria and the New York Edison Company, plus the actual cost of the construction, or of the plant, for the doing of the work. By the books of the Astoria Company the actual cost is evidenced. Which purport to set forth what they have paid and expended on land and improvements. That would not be the original cost of that land, because there have been expenditures applying to real estate investment, in filling and making the land available which is a proper charge in the value of the real estate. It is the actual cost to the company for that property. The Luyster Creek bulkhead was built while this work was going on, but it was completed some time—the latter part of 1922 or early in 1923. Stock for future use miscellaneous mat/erials for operating the plant; that is to say, oil, waste, etc., would be an operating expense and there would be some pieces of machinery which would be some bought and held in stock for the repair account, which of course would be allocated to the two companies on the basis of their use of the property, in so far as tonnage is concerned. For instance, we might handle, 100,000 tons of coal there in a year and it [fol. 1871] may be that the Edison Company might handle about 100,000 tons, in which case the repair account would be 50 per cent, to each company. However, the allocation is based upon the fact that it has been put there for their use and if they did not use it they would still be paying two-thirds on the investment.

I do not think I can answer any more than I have fully explained, as to just what the charges were for plant and property, and as to how the allocation was made for the actual use of the property. In other words, that there is a one-third and a two-thirds charge for the use of the property and the allocation of the actual cost of operation based upon the coal handled.

With reference to Schedule A, which appears to be page 35 of my report, for the year 1923, and which is marked Plaintiff's Exhibit No. 766, about half way down that page, there is a column h-aded Investment Employed in the Gas Business, underneath that, Plant, Holders and Accessories, and opposite that item the amount there stated, underneath

that "Land (see Schedule A-1 herewith)," and then opposite that item an amount stated, then another heading Working Capital as Above,—I think "Working Capital Above" might be changed to "Working Capital Below," as it is the working capital which follows there. There is the cash, material and supplies, residuals, accounts receivable—a matter of four million dollars. Then I say "Deduct the excess of working capital," over the average amount employed during the 12 months in Schedule A-2 which is on there. The Astoria's Company working capital [fol. 1872] is referred to in all that. I have their actual working capital worked up from their books for the purpose of ascertaining what their investment was in plant, property and materials and supplies, cash, etc., which represented working capital, to find out their total investment. That means that there is included here working capital of not less than the amount employed during the calendar year 1922. I will have to look through this and see. You see there the working capital is of $4,300,000 and then on Schedule 2 under working capital for the year—that is taking the twelve months and dividing by 12—the working capital is $3,941,000, and they show a figure of $4,133,000 and then found working capital of $3,941,000, and they deducted that from the capital account to the extent of $62,000, which brought the investment down to $29,710,000 according to those amounts. I do not think there should be any reduction in our working capital as the result of the use by the Edison Company of part of the Astoria Company property. The Astoria Light, Heat & Power Company pays the payrolls for operating the coal handling equipment. And the Astoria's employees make repairs to the equipment, paid for from month to month. All expenses in connection with the operation of the equipment are paid for by the Astoria Light, Heat & Power Company and the proper charge made to the Edison Company for that. It is my intention as president of the Astoria Light, Heat & Power Company to allow the New York Edison Conapany to use part of the land at Astoria for several years. I do not know the extent of time. It may be ultimately we will require it for our own operations. Just what period of time that would be, I could not say. It had

[fol. 1873] been there for the time being for the use of the Astoria Company and the New York Edison Company. The Edison Company is making use of the equipment, and of the space embraced in the storage pike of coal there. I do not know of any understanding between the two companies as to the length of time that that use shall continue. I do not know whether or not the New York Edison Company, before it negotiated for the use of part of that property, endeavored to make arrangements for the storing of coal at any other similarly convenient location. I would not say that it is a fact or not that nowhere in or adjacent to the City of Greater New York could the New York Edison Company have found land provided with handling facilities to store anything like the amount of coal that the said company has stored on the Astoria's property. There was no particular convenience there until we started to put in the bulkheads and put up the apparatus. We had the land there and the equipment was added for that purpose. There are, I should imagine, other land which the Edison Company might have acquired, but I do not know. I have not looked for it. Those conveniences I speak of are of decided convenience for both the Astoria Light, Heat & Power Company and for the New York Edison Company. Of my own knowledge I do not know that the Consolidated Gas Company owns 100 per cent of the stock of the New York Edison Company just as it owns 100 per cent of the company of which I am president. I assume they do. As to the carrying charge for jointly used property I probably signed it, whatever the recommendation was, either as chief engineer or president of the Astoria Light, Heat & Power [fol. 1874] Company. The only reference to the New York Edison in the Joint Facilities Report is a statement showing the amount of plant and property which is being used by that company and has been deducted from the Astoria Light, Heat & Power Company in order properly to allocate the charges by the Astoria Light, Heat & Power Company to the various gas companies using that company's property. I do not see that I, as Chief Engineer of the Consolidated Gas Company, could prohibit them from some sort of an arrangement. I as Chief Engineer and President of the Astoria Light, Heat & Power Company might object to some manner in which they were doing busi-

ness. But we have entered into an agreement as to how the thing should be handled, which I recommended or approved of either as Chief Engineer or as President of the Astoria Light, Heat and Power Company and not as Chief Engineer of the Consolidated Gas Company. Before the agreement was made I, as President of the Astoria Light, Heat and Power Company would not have the power to prohibit the use of that property by the Edison Company, if the Board of Directors of the Astoria Light, Heat & Power Company recommended that such be done and approved it. I as President of the Astoria Light, Heat & Power Company could not disapprove of the findings of the Board of Directors. It was a joint proposition between the Astoria Light, Heat & Power Company and the Consolidated Gas Company. Mr. Addicks had quite a bit to do with it. The question came up originally as to having boats in a position to get coal from Southern ports, that is deep-draft and sea-going vessels. We had no such facilities at the Astoria Plant for the purpose of that and we felt it [fol. 1875] would be of value to us to be able to get coal by such means and, as a result of our desire to do that, the New York Edison Company said that they in turn would like to get the cost from Southern ports and that if we felt disposed to enter into a joint arrangement whereby we could use the same facilities it would be of advantage to both companies, but it was on these lines that the agreement was formulated and put through. Before I recommended the arrangement by which the New York Edison Company was allowed to use part of the property of the company I had never before been confronted with the problem of fixing the charges for the emergency use of the land and the equipment for the storage and handling of coal. I do not claim to be an expert on land values. What it was worth we wanted to collect for, and it was worth something to us and it was a joint arrangement with them because the expenditures of the Astoria Company would have been infinitely greater had we gone into it alone, so whatever advantage there was to the N. Y. Edison Company there was a like advantage to the Astoria.

The advantage to the Astoria Light, Heat & Power Company in this arrangement was because we would have had to build those bulkheads and put in apparatus just as we did

for our use—the bulkheads would have been of practically the same extent as they are now/ only 50 per cent more of the apparatus would have had to be put in if it were simply a plant being installed for the Astoria Light, Heat & Power Company, and to that extent we are benefited in so far as the investment is concerned and the New York Edison Company has an advantage as a result of the dual installation, or the installation being used by the two parties. In other words, if we had gone out and put that in for ourselves and the New York Edison Company had gone to another place and put in a similar equipment for themselves, those two properties, which would not do any greater amount of [fol. 1876] work than this particular property will do, would have cost a great deal more money to both companies. When I figured the investment in the property used in part by the New York Edison Company I do not know that I allowed anything for wire fences. I took the actual value of the real estate as indicated on the books and I did not look to see what kind of a fence it was, whether wire or wooden. I simply took the total value indicated by the company's books. We had the wire fences around Winthrop Avenue long before the New York Edison Company came there, and we did not put up any more wire fences because they did; the other two sides of the property is water. It would be better than a wire fence, because you would have to jump over the creek to get in there. The cost of the wire fence is included in the fixed capital account. The wire fence is put there to keep people out. The Luyster Creek bulkhead was constructed in 1922 was built for the purpose of letting coal be brought into the Astoria Company's plant. We spent on the Luyster bulkhead in 1922 $306,971.55 and in addition we spent in 1922 $134,777.46 for improvements on the entire real estate at Astoria, if it so states in the report you read from which purports to be a copy of the report to the Public Service Commission for the year ended December 31, 1922, so that the figures for impgovements on real estate and Luyster Creek bulkhead were for expenditures in 1922. The information that I have in connection with the expenditures for bulkhead included dredging during the year 1922 as applicable to the Luyster Creek property, $306,971 and that expenditure, whatever it may [fol. 1877] be, was allocated to the two companies and de-

ducted from the capital account on the basis of one-third and two-thirds. I do not know whether that is the same figure. There may be some little accounts that did not apply to this particular piece. As to an expenditure during the year 1923 on the Luyster Creek bulkhead of $416,565.53 and during the same year on the Luyster Creek coal-handling plant, $481,870.61, I have not those figures, but, they have been expended. The expenses for the Luyster Creek bulkhead is not all applicable to this particular property. In other words, there were probably extensions made to bulkheads on Luyster Creek at a point where we handled coal and ashes, which does not come in connection with this actual unloading property. I do not know how much was spent on that or the other, except I am sure whatever expenditure applied to this coal handling plant is included in the joint facilities report. The figures you gave are taken from the company's report to the Public Service Commission for the year ended December 31, 1923. It is simply called Luyster Creek, but it does not indicate whether it is on one end or the other end of Luyster Creek. But the figure of $461,565.53 on Luyster Creek bulkhead is under the caption "Land Devoted to Gas Operations." And according to this report to the Public Service Commission, the expenditure of $481,870.61 appears to have been for Luyster Creek coal handling plant only. We only included in charges to other companies the expenses made during the year 1922 as of December 31st, and anything beyond that would not be charged against the companies for the 1923 operations.

[fol. 1878] I don't recall the figure spent in 1922 on Luyster Creek unloading Bridge. If the report shows $348,927.30 that represents an expenditure as of that time, that is the unloading plant; there was more money spent at a later date. That was the total expenditure up till that time. There is nothing indicated in this report as to what the New York Edison pays. They will pay eight per cent on the investment, but it has nothing to do with this report, however, and there is nothing indicated in this report as to what the New York Edison are paying or are going to pay. I do not recall what per cent the Edison Company pays to the Astoria for taxes, insurance, repairs, maintenance, renewals and replacements on the Astoria property that was used by

the Edison Company for the storage and handling of coal, but they would pay taxes based upon the occupancy of their land and upon the cost of that property in its relation to the cost of the entire property. Now, in the Joint Facilities report there is nothing indicated in so far as operations is concerned. All that the report has tried to do is to take out the investment in land and property at Astoria which would not be applicable to the gas-making business. A little while ago, prior to lunch time, you spoke of the operation of the Luyster Creek Unloading in the handling of Edison coal, and on which we paid the charges for pay rolls, and so forth, as to whether or not that should be deducted from working capital. Now the capital that is indicated in this report is as of December 31, 1922, and there was no work done for the New York Edison or by them until April, 1923. [fol. 1879] So that any working capital that might be included in this Joint Facilities report is an amount prior to the operation or use of that property by the New York Edison Company, at all. The New York Edison would pay something for working capital during 1923, but it is not indicated in this report. That is, this report is based upon the working capital of the Astoria Company for the year 1922, what their average working capital was for the year 1922, and their investment at the end of December 31, 1923, the sum of their investment plus working capital representing the capital account on which other companies should pay in the proportion of the use of each company to the total use. Going back to the working capital shown on page 35, of Plaintiff's Exhibit 766, the working capital of Astoria as of the end of December 31st shows an amount there of four million and *sold* odd hundred thousand dollars, the average for the year being some $60,000 less than that, as I recall. The items are indicated in the report. No deduction from materials and supplies, and whatever materials and supplies that were at or on the plant as of that time were for the purpose of the Astoria Light, Heat & Power Company and not the New York Edison Company. They did not start to use any part of the plant until the following April. I cannot say whether or not those materials and supplies were all paid for. I did not discover any particular amount being in excess as the result of the 1922 operations. The allocations for taxes, maintenance, insur-

ance, and so forth, I found were greater than the expenditures as of that particular year. Of course, you can under-
[fol. 1880] stand that those things are not the same each year. We set up what we believed to be a fair, average operation covering a period of time. As a matter of fact, an analysis would indicate that the charges for the year 1922 were in excess of the actual expenditures in so far as taxes and retirement expense were concerned. There was a deduction made at that time for the year 1923, with the result that instead of having a return covering those things for the year 1923, in so far as the Astoria Light, Heat & Power Company was concerned, there was an actual deficit of $157,000. In other words, their excess in 1922, the Astoria, that is, for 8 per cent return on the investment and for taxes, insurance and retirement expense, was $189,000 in excess of what they actually paid for those items. In 1923 their expenditures were $157,000 in excess of what they received for those items. Taking the two years combined, there is only a difference of about $30,000 between what they actually received and what they actually expended. I will see if I can dig out the actual figures for the taxes, maintenance, repairs, insurance and retirement expenses as compared with the estimates that are contained in my report for 1922 and 1923. This statement I have here relates to that investment devoted to the use of other companies, on which the allocation for taxes for that year, on that particular part of their plant, was $626,085.64. The actual taxes were $606,519 on that part of their plant. The insurance and retirement expense, there was a charge to the other companies to the amount of $320,383.78, and the
[fol. 1881] actual of our insurance and retirement, the retirement expense being based on half a cent per thousand cubic feet, was $150,183.96. So it made a difference there of about $170,000, the combined of the two being $189,767.57 in excess of the actual expenditures. In 1923 the allocation of taxes on that part of the property being used by other companies was $643,816.61 and the actual taxes for that particular part of the plant were $751,000.54 an excess of $107,100.93. That is their expenses, their actual taxes, were $107,000 in excess of what they received from the other companies. The insurance and retirement expense chargeable to the other companies was $109,974.25 and the

THE ASTORIA LIGHT, HEAT AND POWER COMPANY
YEAR 1922

Investment in and Annual Carrying Charges on Plant etc. devoted to use of other Companies

	Investment	Return on Investment 8%	Taxes 2½%	To provide: Insurance & Retire Exp. 1½%	Total	
Plant and Equipment	$21,358,918.30	$1,708,713.46	$533,972.96	$320,383.78	$2,563,070.20	
Land	3,684,507.38	294,760.60	92,112.68	.....	386,873.28	
Working Capital	3,316,915.97	265,353.28	.....	.....	265,353.28	
Total	$28,360,341.65	$2,268,827.34	$626,085.64	$320,383.78	$3,215,296.76	
Actual Expenses and Taxes of the Astoria Company to cover which provision was made in the rate charged for use by other Companies of its Plant etc. as indicated above:						
Insurance		$ 76,819.80				
Retirement Expense (at ½c per M. c.f.)		73,364.16		$150,183.96		
Operating Taxes—Excl. Federal Income:						
Gross Earnings (Total)		57,047.78				
Excess Dividends		6,195.00				
Real Estate (Net)		563,050.96				
Special Franchise (Net)		382.21				
Capital Stock		16,956.45				
		643,632.40				
Recovered in charge for gas transferred Gross Earnings Tax		37,102.71				
		606,529.69		150,183.96		
Applicable to private consumers on basis of cost per M.c.f. of total gas sold and transferred		9.97		1.83		
			606,519.72	150,182.13		
Variation between actual expenditures and amount for which provision was made in the rate charged for use of property...			$ 19,565.92	$170,201.65	$189,767.57	excess of amount provided in rate over actual

1883

THE ASTORIA LIGHT, HEAT AND POWER COMPANY
YEAR 1923

Investment in and Annual Carrying Charges on Plant etc. devoted to the Use of Other Companies

	Investment	Return on Investment 8%	Taxes 2½%	To provide: Insurance & Retire Exp. 1½%	Total
Plant and Equipment	$21,994,849.96	$1,959.587.99	$549,871.25	$109,974.25	$2,419,433.49
Land	3,757,814.40	300,625.15	93,945.36	.....	394,570.51
Working Capital	3,938,516.31	315,081.31	.....	.....	315,081.31
Total	$29,691,180.67	$2,575,294.45	$643,816.61	$109,974.25	$3,129,085.31

Actual Expenses and Taxes of the Astoria Company to cover which provision was made in the rate charged for use by other Companies of its property as indicated above:

Insurance	$ 70,829.87			
Retirement Expense (at ½c per M. c. f.)	88,963.07		$159,792.94	
Operating Taxes (Excl. Federal Income Tax):				
Gross Earnings Tax (Net)	23,494.09			
Excess Dividend Tax	31,599.38			
Real Estate (Net)	666,397.09			
Special Franchise (Net)	364.85			
Capital Stock	29,152.67			
Federal Income ($287,977.96)				
	751,008.08		$159,792.94	
Less Applicable to private consumers on basis of cost per M. c. f. sold and transferred	7.54		1.61	
Net Total		751,000.54	159.791.33	
Variation between actual expenditures and amount for which provision was made in the rate charged for use of property		$107,183.93	$ 49,817.08	$157,001.01 Excess of Actual over amount provided in rate charged

NEW AMSTERDAM AND EAST RIVER COMPANIES

Revenue received from the use by other companies of the property of the New Amsterdam and East River Companies per joint facility report for 1922 together with a comparison between the amounts included therein to provide for taxes, maintenance, and insurance and retirement expense and the actual cost thereof for the year 1922.

	Investment Devoted to use of Other Cos.	To Provide for Return at 8%	To Provide for Taxes 2½%	To Provide for Maintenance 2%	To Provide for and Insurance Retirement Expense 1¼%	Total	% used by Other Cos. per the Foregoing
Ravenswood Plant:							
Plant and Equipment	$1,264,587.35	$101,166.99	$ 31,614.68	.....	$18,968.81	$151,750.48	27.163889%
Land	290,248.11	23,219.85	7,526.20	.....	.....	30,476.05	"
Material & Supplies	148,626.67	11,890.13	.....	.....	.....	11,890.13	"
Total	1,703,462.13	136,276.97	39,140.88	.....	18,968.81	194,116.66	"
Astoria Tunnel	4,604,715.54	325,177.24	101,617.89	$ 81,294.31	60,970.73	569,060.17	78.507377
Ravenswood Tunnel	549,551.64	43,964.13	13,738.79	10,991.03	8,243.28	76,937.23	"
48" & 60" Mains on L. I.	664,323.62	53,145.89	16,608.09	13,286.48	9,964.85	93,005.31	"
Total Tunnels and Mains	5,278,590.80	422,287.26	131,964.77	105,571.82	70,178.86	739,002.71	"
Grand Total	$6,982,052.93	$558,564.23	$171,105.65	$105,571.82	$98,147.67	$933,119.67	"
Taxes—Mfg. Plant, Real Estate & Impr. etc.	$ 87,290.00						
Mains & Tunnels—Real Estate	5,909.24						
Special Franchise	32,792.35						
R. E. of Corp'ns. (Net)	160,673.70						
Total	286,665.29						
Less, Applicable to N. A. & E. R. Plant (72.836%)	63,578.54						
Mains & Tunnels (21.493%)	42,851.73						
Net, Applicable to use by Other Cos.	180,235.02						
Add, Gross Earnings Tax ½%	4,665.60						
Federal Cap. Stock, on basis of ratio of above Invest. to total assets owned—25.742%	4,893.55						
Total Taxes			189,794.17				
Repairs & Maintenance (Except Plant) 48" & 60" Mains & Tunnels only (78.507%)				28,786.92			
Insurance—Plant 27.164% of actual	6,000.97						
Mains & Tunnels 78.507%	961.67						
Retirements—On basis of amount reserved during 1922 for $1.00 of Invest. in Plant In mains and Tunnels	38,335.52				45,298.16		
Variation			*$18,688.52	$76,784.90	$52,849.51	Excess of Amt. Rec'd. over actual of $110,945.89	

* Red in original.

1885

Revenue Received from the Use by Other Companies of the Property of the New Amsterdam and East River Companies per Joint Facility Report for 1923, Together with a Comparison Between the Amounts Included Therein to Provide for Taxes, Maintenance and Insurance, and Retirement Expense and the Actual Cost Thereof for the Year 1923

Ravenswood Plant:	Investment devoted to use of other cos.	To provide for return, 8%	To provide for taxes 2½%	To provide for for mtce., 1%	To provide for insurance & retire. exp., ½%	Total revenue	Per cent used by other companies
Plant & Equipment	$1,224,373 30	$97,949 86	$30,609 33		$6,121 87	$134,681 06	26 225000%
Land	280,646 10	22,451 69	7,016 15			29,467 84	"
Material & Supplies	170,019 78	13,601 58				13,601 58	"
Total	$1,675,039 18	$134,003 13	$37,625 48		$6,121 87	$177,750 48	"
Astoria Tunnel	4,050,083 36	324,006 67	101,252 08	$40,500 83	20,250 42	486,010 00	78 230328%
Ravenswood Tunnel	547,612 30	43,808 99	13,690 31	5,476 12	2,738 06	65,713 48	"
48" & 60" Mains on L. I	661,979 25	52,958 34	16,549 48	6,619 79	3,309 89	79,437 50	"
Total Mains & Tunnels	5,259,674 91	420,774 00	131,491 87	52,596 74	26,298 37	631,160 98	"
Grand Total	$6,934,714 09	$554,777 13	$169,117 35	$52,596 74	$32,420 24	$808,911 46	
Taxes—Real Estate & Imp. & R. E. of C.:							
Mfg. Plant (R. E. & R. E. of C.)	87,115 97						
Mains & Tunnels—Real Estate, Spl. Franch., R. E. of C.	182,269 74						
Total	269,385 71						
Less applicable to N. A. & E. R. Cos.:							
Plant—73.775%	64,269 81						
M. & T.—21.770%	39,680 12						
Net applicable to property used by other Companies	165,435 78						
Add Gross Earnings Tax ½%	2,773 89						
Federal Cap. Stock on basis of rate above Investment to total owned	4,853 49						
Total Taxes			$173,063 16				
Repairs—Excl. Plant Repairs:							
On 48" & 60" Mains & Tunnels only 78.23%				$35,410 46			
Insurance—Plant—26.225%	5,728 91						
M & T—78.230%	925 79						
Retirements on basis of amount reserved during 1923 per $1.00 of investment	41,061 49						
					$47,716 19		

actual charge for insurance and retirement expense at half a cent a thousand is $159,792.94. There is a small difference there of $1.61, but the actual variation is $49,817.00, which is the retirement expense and insurance expense in excess of what they actually received from other companies. The total of those two items of taxes and insurance and retirement expense being $157,001.01 more than they received from those companies to whom they sold facilities. I gave you what the actual taxes were. That is, that was the taxes allocated—that part of the taxes—to the company, for which they expected a return from other companies. The taxes applicable to them were a gross earning tax and excess dividends tax, a real estate tax, a special franchise tax.

[fol. 1882] The gross earnings tax was $57,000. This was for 1922. Real estate, net, $563,050.96. Special franchise tax $382.21; and a capital stock tax of $16,956.45. That made a total of $643,632.40, and there is a recovering charge for gas transferred to gross earnings tax of $37,102.71, which made applicable to private consumers on the basis of cost per thousand cubic feet of gas sold, $606,529.69, and from that there was a small deduction of gas sold at or near Astoria, made a deduction of $9.67, which made a net tax of $606,519.72. There was Federal income tax in it.

The Witness: I want to state, in the gross earnings tax that any tax on any investment of any kind which was not applicable to a gas operation was deducted from these figures.

The Master: You mean these figures are exclusive of that?

The Witness: Are exclusive of that.

Mr. Ransom: That is, that $37,000 figure, for example, in 1922, is deducted.

(Schedules referred to are as follows:)

(Here follow schedules marked side folio pages 1883, 1884, 1885, and 1886.)

Since January 1st, 1923, I do not know of any of the 48-inch mains in Manhattan and the Bronx owned by the Consolidated Gas Company which have been retired or replaced. If the East River Gas Company refused to take gas from the Astoria Company through its mains and tun- [fol. 1887] nels i. e. refused the use of its tunnels to the Astoria we would not be able to sell any of our gas to the Consolidated Gas Company or anybody else other than the three or four consumers that we serve. But I don't know what the East River Gas Company would do with its investment in such a case. With reference to this one of my schedules which is incorporated as a part of my testimony, and which relates to the Astoria Light, Heat & Power Company for the year 1922 I do not account for the difference between the estimated amount to provide for insurance and retirement expense and the actual expenditure, one figure being $320,383.78, which is estimated, and $150,-183,96, being the actual, except that I estimated the retirement expense and it is going to be in excess of what it was actually. When I allocated this I used round figures, as you see, two and a half per cent for taxes and one and a half per cent for the retirements. That is 4 per cent. I used 2½ and 1½, and what I actually did in practice was to assume it would only require about 4 per cent, of which 2½ would probably cover the taxes though it might be more. However, I felt the 4 per cent including both taxes and retirements would cover the entire amount. I was not quite sure and I did not know that it was going to be exactly 2½. In fact, I felt quite sure that it would not be exactly that. I was dealing in round figures, in the belief that in making an estimate for the charge, if we dealt with round figures the amount should be sufficient to cover the expense of the selling companies. Of course, you must understand that whatever money those companies received outside of the return on their investment, which, of course, would not be charged against operation, in like manner the investment applicable to that return would be withdrawn from their [fol. 1888] capital account in so far as our own operation is concerned, and the other items of expense are put into operating income and go to the payment of whatever charges they may have had. In other words, where there is this interchange I do not know how we are going to get

away from it unless we wait until the end of the year and find what the actual amount is, because some are going to pay a little too much and some too little. However, it is all indicated, and where there are any excess payments they go into the operating income of the gas company that is getting that payment. Last year the actual exceeded the estimated. The accounts have been examined from time to time and I have always felt in making this that if there was to be any leeway one way or the other the selling company was entitled to their full 8 per cent. I felt justified in the thought that if the expenditures were somewhat less than what I had estimated they would be, it would be fair to the company in selling its gas to another company, I felt—with adjustments to be made from time to time. It would be possible at the end of December in any one year to make an adjustment to the actual rather than to the estimated basis. It has not been done. I made these reports for the last 12 years, not as a matter of furnishing the exhibits but as a matter of the use of facilities between companies, and I was asked to prepare a plan of some kind that would be fair to all companies concerned. We have changed the rates at various times, and the amounts for taxes, renewals, and repairs. In no year I think have they ever balanced. I might add that if we had used for 1923 the actual figures, the operating expense of the Consolidated [fol. 1889] Gas Company would have been almost $150,000 in excess of what the books show it actually paid.

By Mr. Ransom:

I mean in excess of what it actually paid. Whatever items would be necessary to maintain them. That is, repairing leaks or breaks, keeping them level, making tests on them for electrolysis, determining whether electrolysis is affecting them and, if so, providing means for preventing a further deterioration as the result of electrolysis. In the tunnel, the maintenance of the tunnel would be keeping the water out of the tunnel, repairing any leaks that might be in the mains, the pumps or the equipment, and the power required to pump them. I do not know whether I can tell when the 48-inch main in Manhattan and The Bronx was first laid. I think back as far as well, that was laid in sections. I think that 48-inch main required

three years to lay, and when you speak of that main and this joint facility main, the particular joint facility in connection with the plants on Long Island, the laying of a main, which is the actual jointly used facility of all the companies on Manhattan, there is a main that runs from 71st Street tunnel head on the Manhattan side northerly across the Bronx River and through 134th Street to the tunnel head in The Bronx of the Astoria tunnel. Then we have pipe lines leading across and through the two tunnels, one from 132nd Street and East River tunnels into the Astoria plant and the other one from 71st Street and the East River into the Ravenswood plant, which is at the foot of Webster Avenue, Long Island City. From [fol. 1890] that point there is a 60 and a 48-inch main running in an easterly and northerly direction, connecting up the New Amsterdam and the Astoria plant.

So it makes a complete circle of the transfer system, making it possible for the gas to be delivered in either one of two ways to the plants on Manhattan Island. The 48-inch main in Manhattan and The Bronx is the property of the Consolidated Gas Company, aside from that part lying under the Harlem River, which is the property of the Standard Gas Light Company. The mains and tunnels on the Long Island City side are the property of the East River Gas Company. From the Bronx end of the Astoria tunnel there is another 48-inch line which is used, not by all companies but by the Consolidated, Central Union and Northern Union, which runs from the Bronx end of the Astoria tunnel to the Kingsbridge holder. Payment is made for the use of that particular line by the Central Union and the Northern Union Companies on the basis of the requirements of a 30-inch line. We have no 30-inch line, but in making the estimate I assumed that had the Consolidated no line at all the requirements of the Central Union and Northern Union Company would be for a pipe 30 inches in diameter and a charge was made to them for a pipe 30 inches in diameter.

Coming out from the Kingsbridge holder there are two mains. They are distributing means, but they are in the [fol. 1891] jointly used facilities. There are two 36-inch mains connecting into the Central Union and Northern Union districts and are property of the Consolidated Gas

Company, but are being used jointly by the Central and the Northern Union Gas Companies. The portion of the charge for use is based upon the sale of each company to the total sales of both companies. Now, the mains were laid at different times. I do not know that I have the particular dates. Those are the jointly used mains, your Honor (indicating on blueprint). The general transfer system is not included in these joint facilities, it is just that part of connecting these plants, from one tunnel head to another, with the branch going off to the Kingsbridge holder. I have not that data with me, Mr. Donnelly, that you wanted. It was sometime prior to 1914. I think those mains were laid between 1909 and 1913. That would would be my best recollection. That is the 48-inch main in Manhattan and The Bronx I am referring to. And that answer that I gave, Mr. Woods, with reference to the Central Union and the Northern Union, contained the expression "as determined by their requirements." What I mean by the requirements is so far as that 30-inch main is concerned it is the amount of gas that would be required to go through that line in order to deliver gas to their consumers, and they are actually using a 48-inch main, but we are charging them for a 30-inch main. That 30-inch main is hypothetical, that is a theoretical or hypothetical main that is being used slightly for the Central Union and Northern
fol. 1892] Union Companies alone, just those two companies, and the allocation of charges for that main is based upon the sales of each company to the total sales—that is, the sales of the two companies.

In other words, if one company was selling 40 per cent. and the other 60, the allocation of that charge would be 60 per cent. to the one using 40 per cent. of it and 60 per cent to the other. "Requirements" is not synonomous with actual sales. It is based on actual sales in so far as those two companies are concerned, annual sales on that particular pipe line. On the *m*oint facilities themselves, that is the 48-inch main and for tunnels, the 60 and 48-inch mains in Long Island City, that is based upon their requirements for any particular day, not upon annual requirements.

Maybe I can best explain this way—that the Northern Union Gas Company has no plant of its own whatever. Its

requirements must come from some company which has an excess capacity; in other words, a capacity in excess of its requirements. The only companies that have an excess are the New Amsterdam and Astoria Companies. Therefore, the Northern Union Company's entire plant facilities or requirements must come from either the New Amsterdam or the Astoria Company or from both of them. As a matter of fact the requirements of the Northern Union Company and the balance on the Astoria Company. The Standard Company would be different, inasmuch as the Standard Company has plant capacity.

[fol. 1893] By the Master:

I mean the Standard in these jointly used facilities. It is simply as an illustration. The Standard Gas Light Company have a normal working capacity of ten and half million. Their requirements, the maximun day's requirements, with the proper reserve I do not recall the amount, but I should say 14 or 15 million. It is probably indicated in the report for 1923.

By Mr. Ransom:

It is at page 5 of the 1923 report. The Standard Company have a capacity of 10,500,000 and their maximum requirements for the year 1923 equal 16,339,000, showing that they require property or plant from some other company of 5,839,000. That means that they used the plants and tunnels and transfer system connecting these two plants and tunnels to the extent of 5,839,000 cubic feet per day. The balance, 10,500,000 they make themselves, so that they were using, that that extent, that amount of property belonging to somebody else, which as I recall now was supplied by the Astoria Company to the full amount, to the Standard Company, to the extent of 5,839,000. During that same year the Northern Union Company took 11,240,000 from the Astoria Company that is, I mean plant capacity, daily capacity and 2,803,000 from the New Amsterdam Company. The Central Union had plant requirements from another company to the extent of 6,638,000 daily capacity. All of which, however, is indicated and all shown fully in the report. Speaking of the Northern Union then, when I said a moment back its requirements

[fol. 1894] I mean it is put on the same basis and everybody is on the same bottom. Every company, whether it has plant or whether it has not plant; the entire report is predicated, and soundly, I think, on the fact that each and every company should have the same amount of reserve, which is an advantage to each and every company, with the inter connection, because many of them unless they had that inter connection would have a reverse in excess in a single unit rather than a combined unit. That is as to plant capacity. Now having determined its requirements—and the requirements of any company are its sales and used and unaccounted for, that is, their requirement plus a reasonable reserve, and that is their total requirement for a particular time—from that you can ascertain what the maximum day will be for the companies. Having ascertained that, you allocated the use of the plant on Long Island to those that use it these mains being devoted entirely to the handling of gas for the use of thos prop erties. The only property that is being used by other companies of the Consolidated is the 48 inch mains that we now speak of; the Kingsbridge holder which is charged to the Central Union and the Northern Union Companies also. There are some small mains in The Bronx which have been turned over to the Central Union Gas Company, for which they pay a charge. I will see if I can find that sheet. On page 14 of your 1923 report, Plaintiff's Exhibit No. 766 I give the total for the 48-inch main in Manhattan and The Bronx connecting the two tunnels, not including the Harlem River main. I was going to state in the general [fol. 1895] transfer system, to show whether or not there was a proper allocation for the general transfer system, aside from this particular line that you speak of, in placing any value or cost upon that property and combining the joint facilities, the mains, the tunnels of all companies, all transfer mains, that represents a certain amount of money, say X amount of money. If the Consolidated Gas Company wanted to apportion them on the basis of the sales, on the assumption that these transfer facilities were used generally by all companies, would be on the basis of each company's sales, to the total sales. The Consolidated Gas Company's sales are about 64 per cent of the total sales, or they were in 1923—between 64 and 65. The actual

charge of capital account to the Company for the use of mains and tunnels of other companies, deducting from the Consolidated capital account those mains of the Consolidated used by other companies, indicates that the capital account or the investment in transfer mains properly chargeable to the Consolidated Gas Company represents 59 per cent of the total, whereas their actual requirements or sales represents 64 per-cent. In other words, the Consolidated Company's use of those mains, assuming their use, is proportionate to the requirements of each company, would indicate that an additional charge of 5 per cent. could be made to the Consolidated Gas Company for the use of the general transfer system.

[fol. 1896] The Kingsbridge holder is used jointly for the Central Union and Northern Union Companies. That is the Consolidated Kingsbridge holder, which is being used both by the Consolidated and delivering gas into the Washington Heights section, the gas goes into that holder then crosses the Harlem River at that point, then goes down into the Washington Heights section. The holder is being jointly used, and in making the apportionment I estimated that the Northern Union and the Central Union Gas Companies would require a holder for their service in that territory with a capacity of 5,000,000 cubic feet, and the charge was made to them, not on the 50 per cent. basis of the value of that holder, but upon what the 5,000,000 cubic feet holder, with the necessary pumping equipment, would cost, plus the necessary land on which to build such holder and equipment. The Washington Heights section of the Manhattan Island is not a part of the Northern Union Gas Company's territory. I said that part of the holder that is being used by the Consolidated Gas Company is the gas required in the Washington Heights section, part of the Washington Heights section which gets its gas from the Kingsbridge holder. The balance of the Kingsbridge holder is allocated to the Northern Union and the Central Union Gas Companies who deliver gas to the Bronx. The Kingsbridge holder is not used for any of the needs of the Westchester Lighting Company. We have a connection from the Kingsbridge holder—not from the Kingsbridge holder but going into that district we have the 20-inch line which goes into the Westchester district—the line which at

one time was owned entirely by the Westchester Lighting [fol. 1897] Company. That portion of the line that is now in New York City has since been acquired by the Northern Union Gas Company but beyond the city line it is owned by the Westchester Lighting Company. The Westchester Lighting Company pay a rental on that part of the main that lies within the City of New York, and there is an arrangement and agreement between the Northern Union Gas Company and the Westchester Lighting Company that, to the extent the Westchester Lighting Company has reserve capacity to that extent the Northern Union Gas Company through its affiliation with the transfer system will permit the gas to go into the Westchester Lighting Company district to the extent of the Westchester Lighting Company's reserve capacity and for that privilege the Westchester Lighting Company obligates itself to deliver into the Northern Union Gas Company a like amount to the Northern Union Gas Company if and when required. For the Astoria tunnel I have given what purports to be the original cost and the same thing applies to the 48 inch and 60 inch main in Long Island City and Astoria, whereas, for the Ravenswood or 71st Street tunnel you have given what I have described as estimated original cost. It is necessary to estimate the cost of the Ravenswood tunnel. I do not recall at this moment, but it seems to me we could not get the actual costs. You understand that this material was not gotten up for the purpose of testifying. I think I made this memorandum ten years ago. The statement I have in this says that this tunnel was completed in 1893, at which time the cost of labor and materials was very much lower [fol.1898] than at present. The book value does not represent the actual value of the tunnel as no overhead or interest charges were included. The estimated value of the tunnel as of today August, 1916—that is when this statement was prepared is as follows:

Book value, tunnel alone, $400,000.

Add for increase in cost of labor and materials 25 per cent, $100,000, which gives a total of $500,000.

Add 20 per cent. for overhead and interest charges during construction, which is $100,000, making a total of $600,000.

For tunnel mains, head houses, and so forth in connection with the tunnel add $100,000 which gives the present value of the tunnel, that is as of August, 1916, for the tunnel, tunnel mains, head houses and so forth of $7,000,000.

I have an amount figured here as the original actual cost that would include all of the expenditures. The tunnel is worth considerably more than that today. No part of the Astoria tunnel was renewed or replaced in 1923. Whether or not there will be more or less I do not know. They are building at the present time. They are deeping the channel through Hell Gate now and about 25 per cent. of it is incompleted. The Astoria Light, Heat & Power Company, up to the time of the blasting out at that point, we had a leakage in that tunnel of about 109 gallons per minute and as a result of the blasting that is now being done, it is now up to 180 gallons per minute. What the result will be as to the general repairs and maintenance of that tunnel before this work is completed, I do not know. I figured the cost of renewals and replacements to the Astoria Tunnel just as it is indicated in the report that I gave to Mr. Teele. [fol. 1899] We made an allocation that is 8 per cent. for return and a certain amount for the two years difference, in one case 6 per cent, and in another year 4 per cent. for the items of taxes, renewals and repairs and insurance, and I have indicated that for 1922, covering those items, which apply to the New Amsterdam Company, which I think was put in evidence, that such a charge for the year 1922 was in excess of the actual payments by that company and that the charge for the year 1923 was about $15,000 less than the actual payments made by that company for the items of taxes, repairs, renewals and insurance. The charge for the renewals in 1923 made by the New Amsterdam Company based upon the actual renewals and replacements account of 3 cents per thousand on the amount of gas made during the year 1922 and determining what that amounted to in dollars and cents, deducting miscellaneous such as working capital, and so forth, land, ascertaining the investment which would be subject to renewals and replacements and, having ascertained the cost of those investments, determining the amount of renewals on a per-dollar investment basis. Having found that per dollar of investment

basis, and its relationship to the whole, we multiply that amount to determine the amount for renewals and replacements applicable for the mains and tunnels. It does not assume an equal life for the tunnel and the generator. I took it simply as a whole. You cannot tell when you will have renewals and replacements on the tunnel. It may happen in a year or six months. We do not know when a particular renewal is going to happen. The Astoria tunnel has an indefinite life, but, it might need excessive repairs or renewals in some part. If it is not disturbed in any [fol. 1900] way I would say its life is indefinite. It will remain there a long time but there may be parts that need to be replaced, but I think the hole in the ground will stay there for a long time. I deem it necessary to include a charge for retirement, renewals or replacements, if you had to take some section of it and had to repair it for some reason or other and put in something in its place—so far as that is concerned, it would not make a difference in my charge or my recommendation as to the charge, whether you were to call it retirement or renewal or whatever you want to call it. The Astoria tunnel was put in operation in September, 1915. The original cost as of December 31, 1922, $3,177,126.91, which is the figure given on page 15 of Plaintiff's Exhibit 766, which was taken from the books of the company. The Ravenswood tunnel was built in 1893, I think. I do not know whether it was put in operation then. I think it was building in 1893 and whether it was put in operation in 1893 or 1894 I am not sure, but I think it was probably completed in 1893.

As to the 8 per cent. being proper return I think I discussed it with some of the officers of the company or somebody or other as to what they thought was a reasonable return. The 8 per cent. is return on investment. That is return on investment only. I think they were entitled to that. We want whatever is fair and reasonable. If the Public Service Commission should give us a rate based on the reproduction value of our property and not upon the actual cost of the property, why the basis of return on the amount of the investment would be on my recommendation in accordance with the resolution or whatever it may be called from the Public Service Commission.

[fol. 1901] In other words, at the present time we are getting less than an 8 per cent return on the property on the actual cost, and so long as we are getting such a return or a lack of return, I would not feel justified in making a report on the joint use of properties in any different manner from which the companies as a whole are operating.

As President of the Astoria Light, Heat & Power Company I have very little to do with the loaning of any of the surplus. The financing is largely done through the Consolidated Gas Company for their loans and the matter is brought to my attention and in order to borrow money I loan money if it is brought to my attention, but so far as the financing is concerned it may be within my province but I do not deal much with it. The financial officers of the Consolidated Gas Company and those that are more largely responsible for the finances than I am, have to do with that. You understand the Astoria Light, Heat & Power Company is wholly a manufacturing plant for the Consolidated Gas Company, although the Consolidated Gas Company does not use its entire plant, but the Astoria Light, Heat & Power Company is a concern having a distinct corporate entity, of its own. When money is to be loaned or borrowed and brought to my attention, the action is passed upon by the Board of Directors at which I preside. I think there are a lot of people connected with the Consolidated Gas Company that know much more about finance than I do, however. The Astoria Light, Heat & Power Company received 7 per cent on money loaned to the East River Gas Company to build tunnels. I do not [fol. 1902] recall the date when the Astoria Light, Heat & Power Company last loaned money to the Consolidated Gas Company or the rate of per cent. I sign the reports, as president of the Astoria Light, Heat & Power Company to the Public Service Commission. At the end of the report made by the Astoria Light, Heat & Power Company to the Public Service Commission for the year ended December 31, 1923, my signature appears on that.

Going back to the carrying charges on the jointly used property, I figure eight per cent return on the land. The total carrying charges on the land is 10½ per cent. I have not figured what the actual percentage is of the original

cost of the property which we retire annually. We only set up an amount of retirement which usually takes care of it each year. In figuring the carrying charges on jointly used property for the year 1923 I included the 16th and 42nd Street coal gas properties. I rated the 14th Street coal gas plant at five million cubic feet per day. At the 14th Street plant itself, alone and unaided, twenty-two candle power gas was not made, but the operation of completing the manufacture of twenty two candle power was the result of or subject to enrichment from the 21st Street station. You have to have water gas introduced into the receiving holders at 14th Street. They would put coal gas and water gas in and bring the mixture up to twenty-two candle power. It would have been a difficult proposition to have made at the 14th Street station, under all the limitations embraced in the previous question, gas that would have furnished to the consumer 650 b. t. u.'s per cubic foot. It is rather a difficult proposition to make a coal gas [fol. 1903] and bring it up to 650 under any condition. I think it could be done. It would not be a good operation, but, I think it can be done. You would have had to make a very rich either a water gas or an oil gas at 21st Street, which we had facilities for, and could probably have brought it up to 650. In the case of the 42nd Street plant we could have made there twenty two candle power gas or gas to furnish to consumers 650 b. t. u.'s per cubic foot, alone and unaided. We had all the benches for enriching the gas at the 42nd Street plant.

When I speak of the twenty four hour capacity of the plants, within reason, you could make the qualities that we have been sending out. Those would be the normal operating capacities and I think at 650 b. t. u.'s the actual operating capacity of the plant would be approximately the same. As of June 1, 1923, with the condition of the 14th Street plant as it then was it would have been necessary to start to fire the benches. That would be the first thing—make a connection from outside the valve to the exhauster house, connecting up the plant lines to the buildings; purge the lines where the benches were being heated. That would be all that was necessary. Under the conditions of operation there and considering the benches, their age, and the

number of times that they have been fired and let down, they could have been heated up very rapidly. I testified yesterday that within a week's time, and I think the benches themselves could have been brought to fire within forty-eight [fol. 1904] hours under forced conditions. Now, that does not apply to a new plant where it would take three or four weeks, but a plant that has had fire in it and been brought up and let down again, and there is no danger attached to putting on speed, as it were, in getting the heats up in the benches. Within a week and if rushed, probably in less than that I would not undertake to say how long from June 1st it would have been before we were making five million cubic feet of gas per day at 14th Street if we had been given orders on June 1st to start that plant. The last time we made gas in those plants—I think it was the last or one of the last times—was in February or March of 1920, at which time we made somewhere between four and four and a half million at each plant. It had been fired every winter for a period of time. It had been fired or ready for firing and gas was made during the winter of 1919 and 1920. During 1920, commencing in January of that year, we started the installation of the D plant at Astoria, which was completed in December of that year and placed in operation about the 15th of December. In view of the fact that we had 30,000,000—at least 30,000,000 daily capacity—why, we felt somewhat reasonably safe in not actually firing up the 14th and 42nd Street properties, although that was all that was necessary. A week's time would have put them in a position to make the gas. The coal available to those plants was the same kind of coal that we would have used at Astoria or Central Union. It would not have made any difference. There would not have been any difficulty in getting coal there that would take care of the situation. There was very little stock of bituminous coal on hand at the 14th Street plant on June 1, 1923, but we could get it there in 24 hours. I don't [fol. 1905] know, there might have been several hundred tons; but it was only a matter of, instead of taking it by boat to Astoria, dropping it off at 14th Street or taking it around to 42nd Street, or if there did not happen to be any coal coming in we would load it at Astoria and get it down

there in six or seven hours. The quantity of coal is determined by the amount of gas that is made at each and all of the plants, and that is somewhat determined by the capacity of the plant and certain leeway as to where it shall be sent. It is a matter of routine, largely. I did not assign to the 14th Street plant any delivery of gas-making coal during 1923. Going back to the last time that that plant was operated at 14th Street, there weren't any great quantities made. We were holding the stand-by plants. Several years before, in one or two instances during the winter, there was no gas made whatever in those plants, but they were under fire and ready for operation for a period of sixty days, which we continued to do until such time as we had the D plant, when our reserve was not as low as it had been. In the winter of 1919-1920—I think the plant was put in operation on December 28th and continued until March 7th. I think there were two or three days, I cannot recall now, when there was very little gas made. I would not say it was made every day. I think possible all but two or three days of that period it was made. December 28th was the first day, they started to make gas. I have not any figures here to show the per diem made between those two dates. The amount of gas made was not [fol. 1906] large. We were not trying to make a great quantity of gas. We were simply trying to have them fired and ready in case it was necessary. That is why I say that we get up to as high as in excess of 4,000,000 feet. I have not that figure here with me. Those figures, however, would be contained in the manufacturing reports of the 14th Street plant. The last time that gas was made at the 42nd Street plant was about at the same time from the 27th of December to March 6th. Prior to December 28th, 1919, gas had been made at the 42nd Street plant in the winter of 1917 and 1918, from the middle of January to the middle of February; 1917, from the middle of December, to the 4th of January; and in 1915, they were in continuous operation for a period of time up till about the 26th of August. That is, they had been operated continuously, both the 14th and 42nd Street, in 1915 continuously. They were shut down about the 15th of August of that year

and they were used as a reserve plant. Speaking of the 42nd Street plant, and of those dates, December 28th, 1919, to March 7th, 1920, a small amount of gas was being made on every one of those days in between the two dates. They were there, fired, ready to make the gas, a certain amount of gas being made to keep the apparatus turned over ready to go ahead if it were absolutely necessary to fire them to a further extent. Going back to the 14th Street plant, I do not recall how many of the arches had retorts in them that were in a condition to be operated. There were 144 benches in that house and I do not recall just at the moment I do not think there were 15 benches down out of [fol. 1907] the 144. Of course, we always have some benches down on our repair. 144 benches at 14th Street and 100 at 42nd Street. I mean 15 in which retorts had been removed from the arches. I am just guessing at that, too. There may have been 5, 15 or 20, but there were some under repair. 14th Street was a half-depth direct fire stop-end retorts. 42nd Street was a full-depth regenerative but not recuperative stop-end retorts; 6 benches to the retort. At 42nd Street there were a few benches that had seven benches to the retort. I will describe for you the principles on which a regenerator furnace works as distinct from the full-fire furnace or a recuperative bench. A direct-fire bench is not as economically operated as one that is regenerative or recuperative. A regenerative or recuperative bench is one that regulates the amount of primary air, which is the air going under the bottom of the grates to initially complete combustion, and it has secondary air which comes in at the top of the coke to complete combustion; that is, convert the stuff from CO into CO_2. The recuperative or regenerative part means that the secondary air passes through flues or ducts and becomes heated from the waste gases of the benches and thereby comes in contact with the carbon monoxide gas in the generator furnace at a higher temperature and therefore requires the use of a lessor quantity of fuel under the benches than one that is direct-fired and simply has the primary air for the complete combustion. There is little or no difference between a recuperative bench and a regenerative bench. A recuperative bench, generally speaking, is continuous, and regenera-

tive is somewhat intermittent. If you will look in the dictionary and see what "recuperative" means, it says, "see [fol. 1908] regenerative" and then you look for "regenerative" and it says "see recuperative," both meaning "to recover," speaking of strength. I get mixed on it myself sometimes; I don't know whether I am talking about recuperative or regenerative. But regenerative is rather an intermittent process. For instance, they have it in coke ovens where they shut off a side for—we will say two sections or two ports whereby they are allowing waste heat gases to pass through one of these chambers, passing off into the atmosphere. After a period of time they by-pass that and allow these waste heat gases to pass through the other chamber and admit air through the chambers that had been heated. In other words, it is an intermittent process of heating, accomplishing the same purpose as a continuous one. I am free to admit, I do not know that there is much difference. As I say, look at the dictionary and you won't find much difference.

[fol. 1909] May 12, 1924.

Met pursuant to adjournment.

George E. Woods, a witness for the plaintiff, resumed the stand.

Cross-examination by Mr. Donnelly:

I do not recall the exact figures of the coke made on the 14th Street benches used on an average for firing the furnaces. A direct-fired bench would use somewhat more fuel than a generative or recuperative furnace. I think it would be somewhere around 35 per cent and I think it would probably figure somewhere from 23 to 28 per cent in a recuperative type of furnace. When we last made gas at 14th Street I do not recall the cost per M cubic feet in the holder. The cost was somewhat high, because we were holding the stand-by plants, with all the coke that was being used down at the furnaces and keeping the benches at a proper gas-making temperature, and a number of men there; so that the cost for the limited amount produced would have been quite high cost per M.

By the Master:

I mean higher than it would have been if the plant had been run continuously. Very much so, because it was simply ready and standing by and a certain amount of material and labor being used, and they were not making gas, but they were being held in reserve for emergency purposes.

By Mr. Donnelly:

It would be a cost appreciably higher than that compared with other plants working under normal conditions. The actual make of the plant itself making coal gas, I should say, on a B. t. u. basis was somewhere between 560 and 600 B. t. u.'s. I do not recall the figure. That is 14th Street, before the addition. That is the actual production of the plant itself. The candle power would have probably been from 13 to 16, which was variable. The benches of retorts [fol. 1910] at 42nd Street and those at 14th Street were both in good shape. The benches at 42nd Street, the retorts, were slightly larger in cross section than those at 14th Street, and they had a generative type of furnace there, not the direct-fire. That is the only difference; slightly larger retorts. Their D. shape retorts, cross section was a little larger so as to contain a greater quantity of coal. They were somewhat longer. That can be illustrated by the fact that 14th Street, with a capacity of 5,000,000 cubic feet, had 144 benches in sixes, where 42nd Street, with a capacity of 4,500,000 had 100 benches of—I will take that back—they had about—I cannot recall exactly the exact number; about 90 benches of sixes and 10 benches of sevens.

I would not say, speaking of the benches of retorts at 42nd Street, that they were half-depth recuperative or recuperators, while those at 14th Street were quarter-depth. The benches at 42nd Street were full-depth, generative benches. They were neither recuperative nor regenerative. They were generative in that they were not direct-fired. They had both primary and secondary air, the primary air entering under the grate bars, giving a sufficient amount of air to consume or partly consume the fuel, and the secondary air was admitted at the top of the furnaces but was not superheated as would be the case with a regenerative or a recuperative setting.

If we had been operating 14th Street in June of 1923, the amount of coal used per day would depend somewhat on the coal and the yield, but with a plant operation as it existed [fol. 1911] there, we would have made from 4.8 to 5 cubic feet per pound of coal used. It would be fair to say about 446 gross tons if it would figure out at that. A ton of coal, whether it be a long or a short ton, would produce about 67 per cent of its weight in coke. It would be approximately 294 tons. That is somewhere near 67 per cent. I could not recall the figure. From 30 to 35 per cent. If the coke count is right, 117 tons is the amount of coke produced—I have not calculated it—the amount used under the furnaces would have been from thirty to thirty-five per cent of that amount, of the coke produced. The probabilities are that from 45 to 50 per cent of coke would be available from that produced per day in June, 1923, for sale purposes, if you had been making five million cubic feet of gas per day.

Assuming coke coming from the 14th street plant in 1923 did not have a market, I do not know how long it would have taken to build up a market. As I have said prior to this we would not produce any more coke than we would use satisfactorily in our water gas plants. I do not know how much we would have had to put into stock each day during June and other summer months. If we were not using it and there were no market for it, we would have to put whatever we got as a residual from the coal gas manufacturer, if we produced so much and neither sold nor used any of it, why, whatever we produced would have gone into stock.

Referring to the 14th Street plant if we had been storing a large amount of coke and had not a great amount of coal, we could have stored it in some of our coal sheds, or the coal storage lot immediately east of the plant between [fol. 1912] Avenue D and Dry Dock Street. By the conveying arrangement that we had at 14th Street for transporting the coke from the retorts to the yard, it was arranged so as to deliver coke either to the easterly end or the westerly end of the retort house. If we had to store coke at 14th Street at any other place than that I have indicated, it would have necessitated handling the coke in wagons by being vehicularly-drawn, by means of horses or motors of some kind, if it had to be taken away. If we had used part of our coal sheds which we have done at times for the

storage of coke, it would have been a matter of 125 or 150 feet beyond the storage on the easterly end of the retort house, and had we put it into the coal storage near the river, I should have said it would have been 350 or 400 feet; not more than that. The first part would have been 100 or 125 feet. I am only visualizing about the distance. And the other would have been down to 15th Street, just east of Avenue D, and I should say certainly not more than 400 feet. That would be the greatest point in distance. That last 400 feet.

That coal-handling machinery was used prior to its withdrawal in 1922, speaking of the 14th Street plant, of course, for the handling of coal, coal-handling machinery; that is what it was designed for, and that is what it was used for. The last time that coal was put into the coal sheds the coal-handling apparatus was used. I do not recall the date when that was. The design of that coal-handling machinery I suppose was the Telfer system, if it was power-driven—a long shaft which went up into the upper part of the coal [fol. 1913] shed; the cables running in a north and south direction. The coal was brought in in two ways; that is, for storage on that particular plot a bucket was dropped into a pit from which coal from the docks was dropped into the pit and hoisted by means of this bucket and delivered into the coal shed. There was another which we put in with an elevator, had a belt elevator for the purpose of delivering coal into the retort house and also delivered into a bin overhead where it could be drawn and taken care of by these elevators or cable hoists, of which there were some three or four, I do not recall the number, in different parts of the coal shed. I do not think that coal-handling machinery was actually operated in 1922.

I do not recall how long before we retired the boiler houses we retired or withdrew the boilers. There was one boiler house which had two boilers in it right alongside the office. There was one small boiler, as I recall, alongside the purifying house. The main boiler house was where the present station is, which had never been withdrawn from service. Certain enumerated equipment from the 14th Street plant I recommended be retired from service was physically withdrawn from service, subsequently to my recommendation in 1922; it has all been withdrawn now and physically removed.

Prior to 1923 we had at the 14th Street plant two Root coupled to Greenfield engines and two McKenzie exhausters. Those exhausters were used for overcoming the seal on the drip pipes in the hydraulic mains and forcing the gas through the cleaning machinery. An exhauster is for the [fol. 1914] purpose of exhausting and drawing the gas through the retorts. Regarding the number of exhausters we had for that purpose at the 14th Street plant in 1923, I guess I covered that for the withdrawing of the gas from the retort house and in addition to that we, of course, had a pumping station for handling the gas into the holders from that plant and also into other stations, into our distributing holder station at that point. Gas was sent out under compression by exhausters from the 14th Street station during the last four or five years. That is under some slight compression, in order to maintain the pressure. When the holders get low, of course we have centrifugal blowers, a fan exhauster or a fan pump, for the purpose of utilizing the holders to the fullest extent and at the same time maintain the proper pressure on the district.

By the Master:

After we withdrew or retired from service, on the books, the four exhausters from the 14th Street plant in 1922, they were in good condition for service, so that they could be used.

By Mr. Donnelly:

In the 14th Street plant as of January 1, 1922 there were three sets of purifier boxes. All of those purifiers remained at 14 Street as of June 1, 1923. We did not put in any purifiers at 14th Street between Jan. 1, 1922 and June 1, 1923. Those purifiers were retired on the books during 1922. The purpose for keeping them there after they had been retired during 1922, was so that the property could be operated if occasion required. It was felt that at sometime or other there would be a final retirement of the property, so it was deemed within a year or two that there would be an actual physical retirement, so it was charged against the withdrawal account against this property. [fol. 1915] That they were retained in place and not

physically withdrawn was not because somebody connected with the company anticipated there was a rate case coming along in 1922. We thought we were about through with the rate cases for a while—at least I thought we were. I recommended the retirement of the equipment that I enumerated from the 14th Street station, in the latter part of 1922; I do not recall the date. When the property was finally physically dismantled and physically withdrawn, it was sold as junk. Whatever we got for it, we tried to sell it. It was largely a matter of junk though. We found no place that required that particular property, and it was sold as scrap. No attempt was made to sell it in 1922 after I had recommended its retirement from use on the books, because we did not expect to get rid of it just as of that time. If we could have used any part of it we would have certainly made the transfer at the time it was actually scrapped. We made no transfer at the time it was actually scrapped.

If we wished to operate the 14th Street plant as of June 1, 1923 we could have taken from the gas the last traces of ammonia by the ammonia scrubbers. We had both the tower scrubber and the standard rotary washer.

The function of a rotary washer scrubber is to remove the ammonia gases. We had one rotary scrubber and two tower scrubbers at the 14th Street plant in 1922, altogether. Two tower scrubbers and one rotary scrubber. We had the same number of rotary washer scrubbers in the 14th Street plant as of January 1, 1922. We withdrew one of those in the year 1922 together with its valves and connections on the books, but not physically. The plant remained intact, in a position to be operated within a week's time. That includes the values and connections, that are used in [fol. 1916] connection with the rotary scrubbers, up to the time of the actual physical dismantlement. After I made recommendation in 1922 for the retirement from service of the equipment of the 14th Street plant there was nothing done in so far as the physical removal. It was a simple retirement as a matter of book record. We had two station meters at the 14th Street plant on January 1, 1922. There was no physical retirement during 1922, at the 14th Street plant of two wet station meters, 14 feet 10 inches in diameter. They were retired on the books.

There was nothing in a dilapidated condition in connection with any part of the works. All that I enumerated and recommended be retired on the books as shown by the reports to the Public Service Commission for 1922, every bit of that equipment, storage handling machinery, exhausters, station meters, and all the rest of it—that none of it was retired as unfit for use—is my testimony. Every bit of it was capable of being used in the production of coal gas at the 14th Street station, and was so capable down to the time of its actual physical dismantlement, and then it was sold eventually for junk.

The equipment was all disposed of as scrap, and we did not set up any part of it—not that I recall now—at the coal gas plant of the Central Union Gas Company.

The capacity of the 12-foot Lowe type of water gas sets at the 11th Street station on June 1, 1923 was about two and a half million. I didn't rate those machines at two million cubic feet per day in 1922. I think the company in its annual report to the Public Service Commission made some sort of a rating at that figure for 1922.

[fol. 1917] 12′ machines of the Lowe type are not all alike in so far as their capacity is concerned; it depends upon the amount of equipment as to what the capacity will be. The 12′ machines at the 11th Street Station with the blowing equipment and the parts connected with the apparatus are sufficient capacity to produce 2,500,000 cubic feet per day. There are other 12′ machines that will make a greater quantity. We are making a greater quantity than that on our 12′ machines in Astoria of 3,500,000 but the 12′ machines to make 3,500,000 require certain auxiliary apparatus to enable them to produce such quantity of gas. The capacity would differ according to the auxiliary apparatus. The capacity would be dependent on that. The blowing apparatus and the size of connections and other things have a bearing on the actual daily capacity of the set. The capacity of at 12′ set would be at least depreciably higher than 2,500,000 cubic feet per day depending upon fuel etc. Given a good grade of fuel you can probably under the same conditions produce 4,000,000 cubic feet per day. I tried to keep myself posted on improvements in water gas sets, and I likewise keep myself informed as to the type of water gas sets being installed in the Metropolitan District. My recollection is that the Kings County Lighting Company in

1922 put in a U. G. I. machine. There is very little difference in the type. It is simply a matter of detail. They are all 3-shell machines and very much the same type. The general construction is the same.

[fol. 1918] The rated capacity of their plant was twenty-four million, and they had twelve machines so they made it an average of two million cubic feet per machine. As a matter of fact, it is capable of producing twenty-four million with two of those machines down, so they will make from twenty-four million to twenty-five million cubic feet per day. That rating is also the rating reported to the Public Service Commission, if it is in the report, I think to that extent, the report is incorrect. I think the 11th Street plant is the only one that shows a rating of that kind. The 11th Street plant per day, prior to the purchase by the Consolidated Gas Company, made a report in which they give a capacity for each machine, but, the Consolidated Company have never undertaken specifically to state the capacity of any particular unit, but the normal working capacity is twenty-four millions. In my reports adjusting the carrying charges of the jointly used properties, I rated the 11th Street water gas plant at twenty-four million feet per day. And that rating that I gave in my joint use of facilities reports as the capacity of these plants may have, was the same rating that was given to the Public Service Commission in 1922 and also in 1923—about two and a half million is the capacity of those machines.

Subsequent to January 1, 1923 we did not make any changes in the water gas sets at the 11th Street plant. The per day rating on the 12-foot water gas set of the Lowe type at the 11th Street station *it* is two and a half million. The same thing does not hold true of all 12-foot machines.

[fol. 1919] The Kings County Lighting Company may have put in two 11-foot Lowe type water gas machines, each of which has a rated capacity of 3,500,000 cubic feet per day. I do not know how their contract reads. That installation of 12-foot Lowe type sets was made at Astoria—I think during 1920 and completed about December of 1920. There probably was not a great deal of difference in grate area per square foot of the 12-foot Lowe machines at Astoria any different from the grate surface in square feet of the 12-foot machines in 1903 at the 11th Street station. I un-

dertook to testify as to that in the earlier period of my cross-examination, where I cited the 11th Street plant as an example, that by the addition of the new type of blowing apparatus and larger connections and a general rehabilitation of the plant, putting in new meters and new scrubbers and new condensers and new purifiers and additional land, that plant should be made to produce somewhere between 30 and 35 million cubic feet a day at a cost of fully as much as if we built the plant somewheres else. In other words, there is the opportunity of improving or extending the capacity of that plant at an expense however which would be the equivalent of erecting a new plant of the same capacity for the additional capacity.

We would rate the 12-foot machines in the "D" house at Astoria at 3,600,000 per day, and we can make more and have made more than that. We have 12 machines in that house which have a normal working capacity of 36 million. That is assuming a normal operation of ten machines, and, [fol. 1920] as I stated the other day, that with all of those 10 machines in operation there is always a let-down of one or two or three of them for a short period of time, so my belief is that a good working normal capacity of the Astoria plant is 36 million per day. We have made more than that in a day, and we have also made less. I could approximate the amount of gas we have obtained per day from one of the 12-foot Lowe site machines in the "D" house at Astoria as somewheres between 4,200,000 and 4,300,000 cubic feet a day and on some days, under particularly fine conditions, we have gone as high as 4,550,000. I do not think that we have ever gone beyond that, and that was unusual—an abnormal condition.

Speaking of normal conditions, the machines now may be making four million a day, but when you get 10 operating, as I told you the other day, there are delays and so forth, so in my judgment 3,600,000 is the normal capacity. That plant was built to produce 30 million, but we have found that we could do better. In my suggestion as to the carrying charges on jointly used properties I gave the 11th Street plant at 24 million. I think probably on January 11, 1923 we sent out from that plant 28,470,000 cubic feet of gas. I do not know that that was the exact date, but we have made in excess of 24,000,00 and I think we have made

28,000,000. I think the days they made 28,000,000 they were operating 11 of their sets at that particular time, because they wanted to see what they could put through the apparatus. According to my report to the Public Service Commission showing that we made on January 11, 1923, 30,- [fol. 1921] 567,000 cubic feet. They may have made 30 million. I know we pushed all of our machines to see what we could get out of them, and as I recall the full 12 machines were on on that day. If the record indicates that for the make on August 11, 1923, the minimum make was 4,546,000 cubic feet, I should say that is what it was. When I figured the 11th Street plant for the purpose of ascertaining the carrying charges, I adopted the same figure, that I used in all my previous reports on the same subject and which I would do tomorrow if I were making the report over again.

My original rating on this machine at the 11th Street plant was based on 24,000,000—capable of producing a 22 candle-power gas. I do not recall whether we made at the 11th Street plant an average of 600 b. t. u.'s tested at the station. I do not think it was as high as 600 b. t. u.'s. I do not recall just what the figure was. I should imagine it was a little bit less than that. I will not dispute the report if it so states. The normal working capacity for 1924 average capacity of the 11th Street plant when making 600 b. t. u. gas was 24 million cubic feet per day. The rated capacity of the 11th Street plant if you were making 537 b. t. u. gas on a monthly average, tested one mile from the plant, could probably make about the same, 24 million.

When we made 600 b. t. u.'s at the 11th Street plant in 1923 I do not recall what that gas tested at the testing station. The probabilities are that gas was never tested at the testing station as straight 11th street gas. If it had been I don't know what the condition would be. I would not know. In 1923 we added two 12-foot water gas generators at the 21st Street plant. Each of those 12-foot generators will make—of course, we have not run them by themselves [fol. 1922] but, with all the equipment, and so forth—between 3½ and 4 million cubic feet. The installation of those two 12-foot water gas sets increased the capacity and other changes of the 21st Street plant by 9½ million cubic foot of gas per day. I give the 21st Street plant at the present time, 38 million cubic feet per day rating.

The eight U. G. I. machines and the five so-called Humphreys & Glasgow machines will make approximately the same amount of gas per day, each given the same kinds of material to operate with, but they will have a lesser capacity than the two additional units put in in 1923. All of those machines at that plant are 12-foot sets. I said there were 13; that is, the 5 Humphreys & Glasgow and the 8 U. G. I. had all about the same capacity, but which was of a lesser capacity than the two additions put in in 1923. The sets of the respective makes are about the same. The blowing apparatus and the pipe connections and everything are of an increased size in the later installation.

The 8 U. G. I. 12-foot machines were installed at the 21st Street plant in 1905 or 1906. I cannot recall the exact date. The U. G. I. 12 foot machine such as we have at the 21st Street plant is just as good as a machine purchased today and worth to me as an operator just as much, as far as the machine itself is concerned. We are not putting on automatic controls on the two machines at the 21st Street plant. We have not any automatic controls at the 21st Street plant. We do not intend putting in automatic controls on the 13 machines that we have additional to the two ma- [fol. 1923] chines that we recently installed. Until they have been demonstrated that it will be an economical thing to do, and that has not been demonstrated as of today. In so far as it requires a great deal more money for the 21st Street plant than the Astoria—almost double the amount of money—and the equipment at Astoria does not justify the expenditure of an additional amount for automatic control at the 21st Street or 99th Street plants.

I have operated the two new sets installed at the 21st Street plant, but, I do not recall the date when we did operate them. They could have been operated in 1923 but they were not completed, but they were not in good operating shape, until some time in January of 1924. I think that was the reason—if you will notice, the annual report for 1923 gives the 21st Street plant only a capacity of 28,500,000 and inasmuch as they had not been entirely completed, it was left out of the capacity for 1923. I think they really could have been put in, but, for some reason or other, it was left out. They were actually—everything finished and the floor plates down and in good operating condition about the 15th of January, but could have been operated along about

the 25th of December if occasion required. They had drying-out fires in them, I think, along about the 12th of December.

I did not rate all of the water gas plants of the Consolidated Gas Company in 1922 on the basis of manufacturing 22-candle power gas, because I did not consider the candle power of the gas at all. At 537 or 550 we could get about the same amount of gas additional. Theoretically you [fol. 1924] ought to get a little bit less, but I did not change the rating on the question of the B. t. u. value. When we were on the candle power basis I did not change the rating when we went on the B. t. u. basis. It might have decreased the capacity very slightly, but not enough to make any change. The Barlett-Hayward Company put in the new sets installed at the 21st Street plant. My 1922 rating of the 99th Street plant was 5,500,000 cubic feet a day. I could not recall what is the greatest send-out of gas from the 99th Street station. We have made in excess of 5,500,000—and have made as much as 6,500,000 and 5,600,000 or 6,700,000 under abnormal operating conditions. The generating capacity at 99th Street is capable of producing a greater quantity of gas. The balance of its plant, however, would have to be replaced to make a great quantity of gas for any period of time.

I do not recall the date when the 99th Street plant was shut down. We have shut it down for a number of periods. We have shut it down a good many days during the summer, sometimes for a month or two. It might be so that on July 1, 1923 we sent out from the 99th Street station only 27,000 feet of gas. On the last Sunday in June, 1923 it is probably true we made no gas at the 99th Street station. In the summer time, when the consumption is light, why the 111th Street distributing station can take care of that send-out and they may have taken in gas and sent out from there, but the 27,000 cubic feet indicated on the report would be the difference in the holder one morning as between the following morning, yet they may have taken in gas from the 111th [fol. 1925] Street or the transfer system, and sent it out, and of course the only way we can determine the entire send-out is to ascertain the condition of the holders at all the stations. If the 99th Street station did not make any gas and the difference in their holders on one morning and the following morning—it might be indicated as 27,000,

which would not mean very much. I do not know whether they sent out 23,000 on that particular day, or it might have been 2,700,00. I knew that there have been times during the summer when they have been able to take their distribution from the 111th Street station.

We have shut down at the 99th Street in the summer time for as much as two months. I do not think in 1922 or 1923. I am only speaking from memory. I do not know whether we shut down at all at the 99th Street station except during 1923 or 1922, and I may be wrong. It seems to me, as we have done during the summer time, we have operated for a period of six days a week and let the men off on Sunday. That is true only of the 99th Street plant. In other words the same situation does not obtain at the other manufacturing plants of the Consolidated Gas Company. We made practically the same kind and quality of gas at the 99th Street as we did at the 21st Street station in 1923. We used the same quality of oil at both stations. I would not undertake to say whether there was any great difference in the quality of the generator fuel. I think, for 1923, the generator fuel was somewhat better at the 21st Street station, than at the 99th Street plant. I do not recall the figures. [fol. 1926] As to each bushel of oxide we purified at the 21st Street plant, at the 11th Street plant. At the 21st Street plant they may have purchased a greater quantiy of oxide during the fall, which was an operating expense charged to operation, and it may not have been completely used to the same extent as at the 11th Street plant and the 99th Street plant. As a matter of fact, during the periods of time that shifts back and forth, but the purifying station at the 21st Street plant is just about as good as at the 11th Street plant or the 99th Street plant, 66,000 is low, if there is such a figure. Taking it by and large, 66,000 cubic feet would be low. It may just have happened, as I say, that the amount of oxide in the boxes at the later part of the year would be a carry-over to the next year and increase the purification proportion for 1924.

At the 21st Street plant, on an average, during 1923, gas testing at the station, may be around 596 b. t. u. per cubic feet. If anybody should have asked me, I should have said 590, but the record of course is more accurate than my memory. If the record so indicated that at the 99th Street station we made on an average of 595 b. t. u.'s cubic feet,

I would say that was right. I do not recall the quantity of oil used per thousand for the year 1923 for the gas made at the several stations. I have no data here from which I can say, nor has my assistant.

Now, speaking of the other plants there has not been any difference in my ratings for a considerable length of [fol. 1927] time. I cannot recall. I think 21st Street at one time—it has been quite a long time ago—was rated at 27,500,000 instead of 28,500,000. I imagine the original rating on Astoria, but it is such a long time ago I cannot remember, was probably 20,000,000 on the C Plant, which was afterwards changed to 30,000,000; but the last five or six years the ratings have been the same, as indicated in the 1922 and 1923 Joint Facilities reports. The unaccounted-for gas for each company is based upon a calculation, for each company. There may be some slight difference, I think there has been some amplification of the Joint Facilities report in later years. I think, when the first adjustments were made, it was based upon sales—the sales and used, the unaccounted-for not taken into consideration. The last two or three years I have felt that in order to get the actual requirements it would be a little more exact if we considered the sales and used and unaccounted-for of each company when we were making the allocations. It made little or no difference in the apportionment, but that was simply a further amplification of the Joint Facilities report. The difference would have been slightly changed—there would have been a slight modification. In other words, I think the reports of 1923, 1922 and as far back as 1921, are slightly more exact than the reports prior to that time.

In our report of carrying charges on manufacturing plants we rate the coal gas plants at Astoria at an aggregate of 20,000,000 cubic feet of coal gas per day. The rated 24-hour capacity of the inclined retort house A at the Astoria plant is at 10,000,000 cubic feet per day. And that [fol. 1928] applies to the horizontal retort coal gas house B. I should say the maximum amount of coal gas made at Astoria per day on any day in 1922 was probably a little in excess of 21,000,000. It may have been, between 21,000,000 and 22,000,000 and that would be under conditions of extremely favorable operation. I have not had any reason to change my opinion regarding the capacity of the two

coal gas plants at Astoria since I made my report on the 18th of December 1923. I would not recall whether every bench was in operation or not when we made approximately 22,000,000 cubic feet of gas at those two plants. There may have been a half a bench down or a bench down; I don't know. Of course, there are always some benches down for scurfing. That is taking the carbon out. In the decomposition of coal as a result of the heat, some of the volatile matter coming off from the coal is broken down and there is a carbon deposit forms on the interior of the retorts, which is very hard and dense, and the accumulation after a period of eight or ten or twelve days in such that it restricts the capacity of the retorts, and then it must be taken down and burned out. In other words, air is admitted into the retort and this air unites with the carbon in this material that is fastened to the retort and burns it out. Twenty million is a good, fair operating rating and it depends upon the coals, and so forth, but by and large the gas produced would be less than twenty than it would be over twenty.

If all the benches had been in operation I do not recall how much gas we could have made on the day that we made that approximately 22,000,000 cubic feet on these two coal gas houses. Assuming that the benches out of commission could have produced gas at the same rate per day [fol. 1929] as the benches that were in commission on that day. I do not recall whether there were any down. I said there may have been three or four retorts for patching, and so forth, I don't know. The only thing that I can say is that that plant day in and day out could not produce 22,000,000 and it could not produce 20,000,000 year in and year out, because during the summer months the large part of the plant would have to be down for the repairs and resetting of some of the benches. Good, high volatile coal, good fire conditions, good cleaning coal, no clinkers in your retort furnaces, would indicate that we could produce 22,000,000 for a day or two days, but it would not be a normal daily operation.

The greatest amount of coal gas that we produced on November 17, 1922 at the Astoria Plant was 22,000,000. I do not know whether there was one retort down. I do not recall the particular day, but it is evident and I am quite

sure as of that time every battery and every bench was under fire. Whether there may have been two or three or four retorts down for some particular reason, I do not know; but I have stated that 22,000,000 as produced on that day is 2,000,000 cubic feet in excess of its normal operating working capacity. On that day we had a good grade of coal. The quality of coal would have something to do with it. If we used one coal one day and a different grade of coal the gas comes off more easily. A little higher in volatile matter, the fire conditions are better, and for no other reason than changing coal the output of their particular plant with the same number of benches will increase from three to five hundred thousand feet in a day. [fol. 1930] When we rated the coal gas plants at Astoria in 1919 at 20,000,000 cubic feet aggregate capacity, we were charging the horizontal retorts with scoop machines. We had at that time the West charges. We are now using the De Brower centrifugal charges. It did not effect the capacity of the plant, however, either one or the other.

We did retire some charging machines in 1922 from the Astoria plant because we felt what we were putting in were better and repairs were heavier on that type of apparatus. That had been in operation since 1906. We certainly expected to get a little better results and lesser repair charges on the new apparatus, or we would not have retired the other. That is the only reason retirement is made. The type that we have put in since is a totally different type of charging and discharging machine. It is a type of machine that has been developed. The first type of that kind that was ever used in this country was used at the 14th Street station.

I do not know whether the witness for the defendant District Attorney Swann in the old case recommended it or not. I simply state that the first De Brower machine every brought to this country was bought and brought over by Mr. William H. Bradley, the former chief engineer of this company. We experimented at 14th Street, and while the other case was on we had a De Brower machine experimenting at Astoria for a period of two years before we undertook to make the change. I should say the De Brower machine was brought over in 1902 or 1903 or 1904. Since we put in the De Brower form of projector charging machines we have not increased the capacity of the hori-

[fol. 1931] zontal retort house B at Astoria. The average time taken to charge a horizontal retort on the B plant at Astoria since we introduced the projector type of charging machine would depend on the particular charge. I have those figures. I cannot recall. I should say it would take 20 to 30 seconds. It might take a little longer than that. The average time taken to charge the horizontal retort at the B house when we had in use the scoop form of charger which we retired from Service in 1922. Would be just as quick as with the West type of charger—the scoop type of charger. As a matter of time, we could do it just as quickly with the West type of charger as you could with the De Brower type. The only difference is that there is a great deal more mechanism in the De Brower type, the repairs are very much heavier, you cannot put in as large a charge—that is the limiting size of the charge you could in with that scoop type. Of course, putting in a larger charge does not increase its capacity, because the greater the length of time it takes to burn it off, so that in so far as the capacity is concerned it has not affected it.

I do not know what use of gas we got per pound of coal carbonized in 1922 on the coal gas plants at Astoria. Around five feet to the pound. That depends upon the coal. You can get some Southern coals that would get up to as high as 5¼ feet per pound, and sometimes lower grades. English coal is less than five feet, and some of our own Pennsylvania coals will occasionally run less than that. That depends largely upon the character of the coal and the extent of the burn, that is, the character of your heats and how [fol. 1932] much draft—pull—you have on your exhausters.

Speaking of 1922 the yield of gas per pound of coal may have been slightly less than five feet, but it was not much less. It was very close to about 200 pounds of coal per thousand cubic feet. Now, it might have been 198 or 201. It would be very close to that figure.

Of that amount that I reported getting on the average per pound of coal from the two coal gas houses I do not recall how much per pound I did get from the A plant and how much per pound from the B plant. The A was somewhat higher than the B. Just how much I do not recall now. At any rate the b. t. u. content was a little higher in the A than it was in the B. I cannot tell how much I ob-

tained per pound of coal from the inclined retort house in Astoria in 1923. I haven't that figure with me, but it is around that figure. I don't know; we may have gotten down to 193 or 194 pounds to a thousand cubic feet of gas. I cannot state from memory the amount we obtained per pound of coal carbonized in 1923 from the horizontal retort house B. We would get this data from the manufacturing reports. It is a matter of record, in the manufacturing reports.

To ascertain the amount of fuel used under the benches at, respectively, the inclined house A and the horizontal house B at Astoria, it is just a matter of difference. No company weighs the amount of coke unless they are operating on producers, the amount of coke that goes into a furnace. That is, we estimate that out of every ton of coal used there would be a residuum in the form of coke to [fol. 1933] the extent of about 67 per cent. of the weight of the coal. The coke that we may sell or use under the generators or under the boilers is ascertained by weight and the difference between weight and the assumed 67 per cent. is charged to fuel under the retorts. I think we got from the inclined retort house plant A at Astoria a better quality of gas than we got from the B house. I think the inclined house in some respects has a slight advantage over the B house. In other respects it has not, in that the B house at Astoria is penalized to a certain extent, because a very fine coal, or coal that is damp, will not lay properly in the A benches, in the A retorts. That is, it is a matter of gravity, the retorts being set at 32 degrees, and if the coal is fine or moist it makes a very uneven charge. The result is that it does either one of two things: The coal is not properly burned off or it becomes too highly heated in certain parts and produces lampblack and stops up the standpipes. Of course we are operating the two plants, and in order to relieve that situation we give the A plant the better grade of coal; that is, the more uniform run of coal in order that the charge may be put in fairly level. The B plant being put in with a charger, mechanically done, can handle those finer coals to a better advantage than is possible in the A house.

By the Master:

That is, as to the type of the retort. The only thing is it affects the operation of the B house slightly, because the A gets a little better coal and the B gets what is left. So that there are times that I would not expect our B plant, year in and year out, operating as we do—in other words, [fol. 1934] trying to get the best we can in both—to have the B results quite as good as the A on that account. In other words, the A coal is selected and B is not.

By Mr. Donnelly:

I do not recall that in December 1922 we got 579 b. t. u.'s per cubic foot of gas tested at the plant from the inclined retort house, and in the same month only 568 b. t. u.'s cubic foot from the B house. We probably did get such figures. Similarly in November, 1922 if it was so reported that we got 580 b. t. u. gas from the inclined retort house plant A, and from the B house 576 b. t. u.'s that is what we got. I would make the same answer as to whether we got in October, 1922 577 b. t. u. gas from the inclined retort house A, as against 560 b. t. u. gas per cubic foot from Plant B.

It may have been possible that in December, 1923 we got a slightly better quality of gas from the coal gas plant B than we did from the coal gas plant A, at Astoria. If it was so reported, that is what we got. It may been true for our B plant 582 b. t. u.'s and for the A plant 575 b. t. u.'s. In November 1923 the quality of gas from the respective coal gas plants at Astoria was practically identical as shown by our books. If the books indicated that, they were. Similarly in September, 1923 the quality of gas was from the respective coal gas plants at Astoria practically identical. I think the figures are right. There would be those charges from day to day. I would not be able to carry those figures in my head and I could say that if you got these figures from our records they are correct. We do have those differences.

[fol. 1935] The quality of gas to show the b. t. u.'s on the A plant and the B plant at Astoria in 1923 is tested every hour, practically, I think, in 1923. A large part of the time it was tested with a Junkers flow calorimeter. I

do not know for what period of time, but I should say for six or seven months it was tested by a recording calorimeter—a Thomas recording calorimeter, and checked on every shift by a flow calorimeter. That is, when I say "tested," we have for some considerable period of time a continuous report, a continuous reading, record of the b. t. u. content. We preserve the records of those tests at Astoria. The charts are not sent to the Accounting Department in 15th Street. The summation of the b. t. u. content for the day is sent to the general office, but each individual test is not recorded and sent to the office.

I do not recall whether we made any substantial repairs, changes or improvements to the B plant after July, 1923. We were making substantial repairs, that is, we were rebuilding benches, putting in some new buck stays on some of the benches which is a substantial and expensive repair, after July, 1923. That was going on at that time. I am quite sure there was a difference in the months January to July, both inclusive, of 1923, in the number of b. t. u.'s in the gas from the A plant as compared with the b. t. u.'s in gas from the B plant for those months. It may have been both ways, but I think, generally speaking, the A. b. t. u. content was a little higher than that of the B. I have given the reason for the variance. Those differences [fol. 1936] that I testified to a little while ago would partly explain the difference in the cost of manufacture in the two plants. The A plant is a somewhat more efficient plant. In other words, the B plant is mechanically operated, and the A plant manually operated. The manual operation is comparatively easy to perform and a man can do a considerable amount of work. In other words, gravity takes care of a large part of it. The B plant is all mechanically operated, which requires the use of heavy machinery, which of course, requires repairs and up-keep and a little more damage to the benches when operating the machines mechanically as compared with manually. Our repair account has always been higher in the B than in the A but, by and large, the B plant, compared with other operations of the same kind, the B repair account is not high. There would be a greater difference than seven-tenths of a cent between A and B in the cost of manufacture.

There would be a difference of six or seven cents, by and large, considering repairs, operation, maintenance,

yield. Our repairs are considerably higher in the B, as I said. Our yield is not quite as good, as I have indicated the reason for. The manner in which the coke is handled mitigates somewhat slightly to the disadvantage of B as compared with A. Combining the sum of them, there is a difference between the A and B plants. It may run to six or seven cents per M. cubic feet.

If we increased the quantity of coal gas that we made that does not increase the cost of production per thousand cubic feet under the same operating conditions.

[fol. 1937] There might be some instances where it would decrease. In other words, you get certain overheads in the form of superintendence, and so forth, which with a larger production would tend to decrease some of those overhead charges. In like manner, though, I can see where an increase in operating would increase the actual gas making labor. In other words, if you had just enough operating in one of your houses that required the full use of all the men you had in that house, then if you added, say ten or fifteen or twenty per cent. additional you would not have enough there to keep the men that you would actually require busily employed all the time. In that way it would increase in your cost. In other words, in the B house a fifty per cent. operation is more economical than a seventy-five, because we can run fifty per cent with one gang of men, or one set of men. When we go on to seventy-five it requires two sets of men. So that a seventy-five per cent. operation in the B house is not as economical, from the gas-making point of view of the men actually putting the coal in, jumping stand pipes, and so forth, as a fifty per cent. operation. That is not quite the same in the A house, because the units are smaller and each battery has a certain number of men which takes care of it.

I do not recall whether in 1923 we made more coal gas on the B plant than we did on the A plant. That may have been occasioned on account of some repairs going on. In my suggestion carrying charges on jointly used manufacturing properties for the year 1923 basis, the amount of unaccounted-for gas of the Astoria Light, Heat & Power [fol. 1938] Company is partically nothing. They only have about half a mile of main to supply three customers or consumers. I assume no unaccounted-for at Astoria the

gas that is made at Astoria is metered before it goes into the storage holders. We measure the amount of gas that we send out from Astoria into the transfer system of mains as follows: It is the amount of gas made plus or minus the stock on hand at the beginning of a period as compared with the end of a period, less the amount of gas that was actually sold to the three consumers. The gas going out is not metered. It is only metered as it goes into the holders. It would not be feasible to meter it as it goes into the mains. It would not be feasible. It would be a very foolish thing to do. It could be done. It would accomplish nothing.

You could not have identified it any more with or without the meter. The identification would be the same. In other words, you could not identify it in either case. That is to say you would not know where the particular gas came from. There is no device by which that gas could have been made identifiable when they get mixed. It gets mixed in the lines. The point of mixing occurs at the different plants. For instance, pumping, taking from Astoria, such gas that travels down through the 60 and 48 inch mains into the 71st Street tunnel would be mixed at Ravenswood with the Ravenswood gas. That, in turn, might go down town and be mixed with both 21st and 11th Street gas. If it went the other way, it would probably be mixed at times with some of the Central Union gas, and on going [fol. 1939] downtown further, with the 115th Street, that is the Standard Company and 99th Street. There is condensation of gas in the two fifteen-million cubic feet capacity holders at Astoria. It is difficult to say how much expressed in percentages. Of course, there is some water content that drops out, and you also get some light oils, drip oil. The amount depends—well, on one of two things, or both of them. The temperature at which the gas goes into the holder, which is always above sixty, a correction being made for sixty in recording the corrected make, and the temperature of the atmosphere. I do not know how much it is, but it does not make any difference anyhow in so far as our calculations are concerned. There is condensation of a considerable amount there at times in the form of drip oil, but it is really a condensation resulting

from a temperature of from 75 to 85 degrees, and if it comes down to 60—in other words, if it should drop to 60 in the holder—the amount of gas in the holder would have been actually the same as what we put into the holder with the correction.

On the C plant at Astoria we have The Williamson water gas machine; and at the D plant at Astoria, the three-shell Lowe type, I suppose you could call it. The Williamson is a single shell with a generator and a carbureter and superheater superimposed over the generator, and the three-shell machine has a separate generator, carbureter and superheater. The functions of both are exactly the same, except in one case the shell is superimposed over another shell, while in the other they are stretched out in a horizontal line.

[fol. 1940] We rate the C plant at 30,000,000 cubic feet per day. The 12 machines in the D plant at Astoria are rated at 36,000,000 per day. We have operated the D house to capacity. That is, we have made more than its rated capacity, both in the D house and the C house. I do not recall what is the greatest capacity for 24 hours that we have obtained from the D house at Astoria. I think at one time or other when we were trying to see what the pipe connections could take care of we made 93,000,000 at the Astoria plant, which has a rated capacity of 86,000,000. At times I am quite sure we could get 40,000,000 cubic feet daily capacity out of the D house, even with two of the machines down for repairs. I think under very favorable conditions it might be that we could get 40,000,000, I am quite sure, but I would not want to put them as a normal operating capacity at 40,000,000. I mean by "favorable conditions," good grade of coal, labor conditions as to cleaning, and so forth, quickness of cleaning of the fires, the fires themselves in good condition, whereby you could get the capacity from the machines. They will vary depending largely upon the character of fuel and the time it requires to make the cleans.

We rate the water gas sets on the D house at Astoria on our own working capacity. We do not consider the manufacturing capacity—the manufacturer's rating. As I say, we put in the C plant, based it on a 20,000,000 capacity.

The manufacturer stated that that was about what we would get out of it, using retort house coke for water gas making. [fol. 1941] We found that we could produce 30,000,000. Then we put in the D plant as a 30,000,000 basis and put it in operation and found that under normal conditions we felt that we could make 36,000,000 every day. Therefore, we increased the C from twenty to thirty and the D from thirty to thirty-six in arriving at our normal working capacity of those two units.

When we rated the machines in the D house at Astoria we figured on using retort house coke made at Astoria for feeding the generator fuel on the water gas machines. That was the condition under which it was going to operate. That is the reason we gave it that rating. The capacity of the water gas sets in the D house at Astoria if we were using the Virginia coke made by the Seaboard By-Product Coke Company, which coke we have used in some of the Consolidated plants, would improve our rating somewhat. Whether it would affect the cost of operation as compared with using the retort coke would depend on what we could buy that coke for. That would vary. That is a special grade of coke. The Virginia coal, a higher grade, there is some southern coal, high volatile coal, and about 20 per cent of low volatile, for making a very good grade of coke. We are using some of it.

The Bartlett-Hayward concern put in the D plant at Astoria.

[fol. 1942] As far as the Astoria Light, Heat & Power Company is concerned, its return on the investment is indicated by the books of the company on the money actually spent. The figures given for the valuation of the manufacturing plant of the Astoria Company are the actual cost as shown by the Astoria Light Heat & Power Company's books as of December 31st, either 1921 or 1922, whichever year you are speaking of. In other words, I took the figures as shown by the Astoria books, as of December 31, 1922. The Astoria books probably show real estate acquired prior to December 31, 1908, at a book cost of $1,892,367.37.

Cross-examination of George E. Woods (resumed) by Mr. Donnelly:

In fixing the carrying charges of the Astoria Company plant for real estate for 1923, I valued it at $3,760,306.70. When I figured the value of the land at Astoria for the purpose of arriving at the general carrying charges, I included with the land, piers and bulkheads. It would include something for piers and bulkheads installed prior to 1908. I think the books show this actual figure for piers and bulkheads installed prior to June, 1908. I do not recall what is on the books now, but this is supposed to be the actual cost as on the books of the Astoria Light, Heat & Power Company. In making up my value for the land [fol. 1943] of the Astoria Light, Heat & Power Company for 1923, carrying charges I do not know whether I included in varying charges for organization and construction on this land value. I simply took the records as indicated by the books. I did not indicate whether there is any interest or organization in here I am not prepared to say.

I do not recall and I do not think there is, included in my figure for land anything for expenses during organization because I think this indicates the cost of the land and the bulkheads with the interest which is applicable to the land. I did not add anything to the book cost of the land at the Astoria Company plant to arrive at the figure of $3,760,306.70 appearing in my application on which the carrying charges of the Astoria Company's plant were predicated. That is the actual cost as indicated by the books. I do not know when the land was purchased after 1908 which appears on the Astoria Company's books at a cash cost of $1,446,039.40, as of December 31, 1922.

In 1922 we did not add to the land occupied by the gas works at Astoria. There were no additions to the actual area, but there may have been some improvements on the land in the way of filling, etc., in 1922, there was no addition to the area in so far as the land space is concerned.

I would not undertake to say how much of the water frontage in Astoria is now unimproved by bulkheads or by other means. It is practically, on the East River front,

possibly 1,200 feet that is not bulkheads I should say about that, but I am only guessing.

[fol. 1944] The water front there is suitable now for gas works, except there is no bulkhead there, but the property is being used there adjacent to the bulkhead. In other words, it may be a matter of fifteen or twenty feet right along the bulkhead that is not being used, but aside from that all property is being used along there. I mean in so far as that part of it which is not bulkhead is concerned, in order to make it available for use for gas purposes we would not have to use any dredging. Portions are being used now. If you want it to land vessels there you would require a bulkhead and also require some deepening of the water-way, along the part that is not yet bulkheaded.

It may be that in fixed capital installed prior to December 31, 1908, at Astoria our books show an item for interest on construction expenditures of nearly $1,000,000—I did not calculate the interest during construction shown on our fixed capital account prior to that date. I do not know to whom that interest was actually paid. I am not sufficiently familiar with the books to indicate the amounts as to how they are allocated. Whether under the heading of "Intangible Capital," the Astoria books show as of December [fol. 1945] 31, 1922, for fixed capital installed since 1908, an amount for organization, I haven't anything here to indicate. I imagine there was some organization charge. There must be such an account in the year 1922 in the Astoria Company's books showing an amount charged for engineering and superintendence. I cannot tell you to whom the principal part of that amount that was paid for engineering and superintendence during the year 1922. The payments made would apply to any work done for the Astoria Light, Heat & Power Company. Whether it was done by themselves or somebody else, it would be a superintendence charge of some amount. It was probably done, some of it, by the Astoria Light, Heat & Power Company and some of it also through the Consolidated Gas Company's Construction Department. It is probably true that as of December 31, 1922, I had on the Astoria books unfinished construction of nearly one million dollars.

I will not admit that some of the working capital shown in your calculation should be charged to the New York Edison Company. There should not be any. The New York Edison Company did not do any work or any operation until April, 1923, and this working capital was based upon as of the year 1922, when the New York Edison Company had not been operating either by themselves or by us during that period. If the New York Edison Company operated some of the equipment, they will pay for the operation and it is being paid for now, but so far as the use of the property by either company—by other companies, aside from the Astoria Light, Heat & Power Com- [fol. 1946] pany, it is based on the working capital as of 1922, at which time there was no work being done for the New York Edison Company.

I stated that there was not only a possibility but a probability of the repairs being necessary to the Astoria Tunnel as a result of the blasting done by contractors in dredging the channel nearby, but it had not developed to the extent of the repairs being necessary at this time. I stated that the leakage from the tunnel was about 108 gallons of water per minute and as a result of this blasting, it had increased to 190 gallons. The extent to which the repairs have been made to the Astoria tunnel have not yet been influenced by any blasting there.

Redirect examination by Mr. Ransom:

I have no figures here which show the maximum day's send-out of the system companies and of the Consolidated, and the day on which it occurred during each winter from 1916 to date. This (referring to memorandum handed witness by counsel) shows the maximum day's send-out by the system and for the Consolidated Company in the winters indicated and on the days indicated.

This memorandum which plaintiff's counsel asked about, showing the maximum send-out for the winters indicated—that is, beginning with the winter of 1916-1917, and down to and including 1923-1924 relates to all plants connected up with the general transfer system. There are various Maximum send-outs. That is the maximum send-out of [fol. 1947] all the plants in the transfer system. That is,

all the plants on the day there shown, sent out the quantity of gas which is there shown and in the right hand column is shown the aggregate amount send-out on the indicated days by the Consolidated plants. That is including Astoria as one of the Consolidated plants. The maximum send-out is the aggregate of all the plants on the transfer of gas system. That is, so far as the system companies concerned are connected with the general transfer system. Of course, the Consolidated send-out is a calculated send-out based upon its ratio to the whole. It is the ratio to the whole of the total send-out.

The send-out is the total make of all the plants in the transfer system with an addition to or a deduction from that amount depending upon the gas on hand on one morning as compared with the gas on hand the following morning. For instance, if they had made one hundred million cubic feet on a particular day and the stock on hand this morning, we might say, was sixty million, and during this day we made one hundred million and the stock on hand tomorrow morning should be fifty million instead of sixty million, the send-out of this day would be one hundred and ten million. In other words, we would have sent out ten million more than was actually made during that day.

In so far as the figures showing send-out are concerned that is a summation of the send-out of all plants connected with the general transfer system, as shown by the records of my office. That first column is the maximum send-out of the system in those winters, on the day indicated. Of course there is no real means of determining that on the [fol. 1948] maximum day of the system the Consolidated had its maximum day. In other words, we find the ratio of the Consolidated's requirements to the total requirements for the year, and we are assuming that its requirements, that is its maximum requirements, would be on the same day as the maximum requirements of the other companies. However, there is no real means of knowing just what the maximum requirements of each company were except as a matter of actual calculation, on a given day. That is as far as send-out is concerned. Of course, it is a total send-out and we can only determine the actual send-outs by a method

of calculation, in that we know the ratio of the requirement of each company to the total requirements is such a per cent, covering a period of time, and we assume that its requirement on a particular day was in the same ratio or the same percentage and I have shown that ratio in the fourth column.

The figure that I have here shows 91,450,000 made at 42nd Street Plant from December 27th to March 6th, of which there were 89,618,000 in the year 1920. I cannot state how much of that was made in the month of February, 1920. I have not February with me. This is a sheet (counsel having handed it to witness) prepared from my records which shows that for February the total is for February 1920 is 53,532,000. The total made at 14th Street in February, 1920 was 39,483,000 and at 14th Street for 1920, 74,522,000. It is my judgment that at any time in 1920 or thereafter those plants could have made very close to their rated capacity, because the 42nd street, which has a rated capacity of 4,500,000, did early in the spring of 1920 ma*de* 4,202,-[fol. 1949] 000; and the 14th Street made during that same period, the maximum day, 4,820,000, so that I think they could closely approximate their rated capacity. That condition continued down to the end of October, 1923. The figures given in my Joint Facilities report as to the ratings of the difference plants are based upon the rating of the plant as a whole. It is based upon our actual experience as to what we find we can do under good normal operating conditions, and of course you must consider the plant in its entirety in arriving at that figure. In the case of a water gas plant, for example, I would not base my figure for the Joint Facilities report merely upon the capacity of the machines themselves, and did not. Referring to the questions asked me today with respect to the Astoria plant I would say from my knowledge and experience that we have enought bulkheads at Astoria for the use of our entire area there, for gas purposes. Our present bulkheads are sufficient for all purposes at that plant.

Referring to the 14th Street and 42nd Street coal gas plants and the sale of the land there at the end of 1923, it is not my judgment and experience that coal gas apparatus of the sort that was at those two plants may be economically

taken down and removed, and set up somewhere else when the plant is abandoned. With respect to coal gas apparatus there is nothing else to do but to scrap it, and that is irrespective of the age or condition. When we last operated the 42nd Street plant we made 22 candle power gas there after enrichment.

[fol. 1950] In 1922 we had under consideration the possible necessity of equipping the 14th Street plant, or possibly the 14th Street and 42nd Street plants for year-round operation. These units which I recommended the retirement of were the units of equipment which I would have first retired to equip the plant for year-round operation, and subsequently in 1923 we went ahead with plans for providing the capacity at 21st Street and the creation of a new plant unit at Hunt's Point and then I recommended the sale of the 14th Street and the 42nd Street plants.

From the viewpoint of operation of the plants of the Consolidated Company, including Astoria it was regarded as desirable by me in 1922 and thereabouts, that we should have an installation enabling the bringing in of southern coal and British coal by vessels. That was something that we deemed desirable from the viewpoint of the gas companies alone. We were in great need of obtaining coal from those sources and we obtained substantial quantities of British and southern coal.

By the Master:

Previous to that installation we had been unable to get coal from both sources delivered there except at enormous expense. It had to be brought here, brought down the bay and then unloaded by hand into the harbor vessels, and then taken to that point. There were no facilities for direct delivery.

By Mr. Ransom:

Up to that time we were not able to bring gas coal into Astoria by seagoing vessels. Along the East River front there were not sufficient water at that point for the receipt of those vessels. So that under the conditions of coal supply as they existed in recent years, such an installation would have been desirable, leaving out of consideration [fol. 1951] anything except the gas company. It does

really more than that: It provides us with an additional market for the receipt of our coal, which I think tends to help us get a better price on the market where we are purchasing coal. In other words, we have brought in competition. With the price of coal as it stood in recent years and the conditions as to supply, I think this additional investment has been warranted from the viewpoint of its effect on the cost of our coal. I approved that plan upon that basis.

Recross-examination of George E. Woods by Mr. Donnelly:

So far as these figures purporting to show the maximum day's send-out are concerned, so far as the figures relate to the send-out of the Consolidated Company, it is a matter of computation. We have no means from day to day of knowing the send-out of any particular company inasmuch as all the gas is connected up with the general transfer system. We do know over a period of time the gas requirements of any one company, which is the amount of gas sold plus the amount of gas used, plus the unaccounted for. Knowing the requirements of each company we can determine the ratio of each company's requirements, over a period of time, compared with the requirements of all the companies. For instance, the Consolidated's annual requirements represent 65 per cent of the total requirements of all the companies, and we may safely assume that when we have a maximum day the Consolidated's requirements as of that day represents 65 per cent. of the send-out upon that maximum day. So far as the total send-out is concerned, those are actual. The allocation between companies [fol. 1952] is a calculated figure. In so far as the actual send-out represents the total send-out, those are actual figures taken from the books and records of the other companies.

By Mr. Ransom:

They are records in my office. And this figure as to the Consolidated headed "Cubic Feet" is the result of applying the percentage shown in the fourth column to the total M cubic feet of the system.

By Mr. Donnelly:

We get the engineering records as the results of operation, which come in to my office from each company every day, and that compilation is made from those records. They have their records of those results, and we also have them in our office. When I say each company I mean the companies upon the transfer of gas system.

All the computations that appear upon the colored part of the Exhibit 834 and likewise upon the black colored prints in white letters and figuring have been based upon succeeding years as the result of my knowledge of what has taken place prior to this. All the computations are based upon years to come and are therefore not included in any books or anywhere. My knowledge as to succeeding years, however, is acquired from records in my office from which I made the calculation, which are transmitted from the different plants to my office but they are original records.

As to the figure in this column of this exhibit headed, "Generating Capacity 1924," I know those. There are no records which indicate what those are; that is my own knowledge. I know the plant capacity of all the plants connected with the general transfer system.

By Mr. Ransom:

I know the send-out of the system companies. In the [fol. 1953] regular course of my duties I compute the relations which the Consolidated requirements bear to the system requirements. These computations are correct (handing witness).

By Mr. Donnelly:

I got the figures showing the make of the 42nd Street plant in February, 1920 from the manufacturing records in my office, and the same thing holds true for the figures relating to the 14th Street plant. I can tell you how many days continuous operation there was at the 14th and 42nd Street plants in 1920,—the latter part of December—I think from about the 27th of December till about the 6th of March, some gas being made every day including Sunday.

I wouldn't base my rating of the plants on the capacity of the individual machines because there may be a condi-

tion that may exist where the machines might be able to make more gas than the balance of the plant might be able to probably handle, in which case your rating is based upon what you can normally produce and put through your entire plant. It is a fact that the capacity of a particular plant is dependent upon the aggregate capacity of all machines which make up the plant. Speaking of the part of Astoria which is not bulkheaded, it would be susceptible, in some cases, to bulkheading. As to how long, in my judgment, will the extent to which Astoria is at present bulkheaded be sufficient for our purposes at Astoria is sufficient now and for some extensions it will take care of the present plant capacity and some additional plant capacity—probably the full amount.

It would not be practicable to have the carbonizing plant equipment set up and installed in a place other than its [fol. 1954] original place of installation. You would have to dismantle it and destroy it in its entirety. It would be impracticable to put it any place else, dismantle a lot of brick work, and when you dismantled or physically withdraw it, it would be nothing but a scrap plant. I mean that applied to 14th or 42nd Street.

The 14th Street plant was so equipped in 1922 that it could make gas the year round. There was nothing to be added or done at 14th Street in order to make it available for all the year round operation and with the equipment that we had there in 1922, it would have been quite practicable to have made coal gas all year round in 1922. What I say about the impracticability of setting up the coal gas plant equipment at 14th Street does not apply to the boilers. There are same parts of apparatus I spoke of the carbonizing plant particularly. Boilers might or might not be removed. It is possible to remove them.

That bringing in of British coal at Astoria was a rather unusual occurrence in so far as we never had facilities for bringing in British coal before by ocean-going steamers. The necessity for bringing coal from as far away as England was a rather unusual one in my experience as chief engineer of the Consolidated Gas. We would consider it unusual if we brought it in again. Years ago some coal was brought from England. A good many years ago we used to purchase English coal in competition with American coal when it was advantageous to buy from England

I mean, because of a lower price. It is fair to say that if we could buy our coal cheaper from England, we would buy it there, assuming of course, that the quality was good [fol. 1955] enough for making of good coal gas. I did not say that with the installation of that improvement at Astoria for landing British coal we have achieved or accomplished an economy in manufacture. I said that it gave us another market and I think it would tend to give us a better opportunity of having more competition in the purchase of coal. Just what that will amount to, we have no means of knowing, but I believe where you have more strings to your bow, the better chance you have of getting the best price. It will be a question of supply and demand, given the same conditions as existed I think it may be a little better.

[fol. 1956] New York, May 13, 1924.

Met pursuant to adjournment.

JOHN VIPOND DAVIES, called as a witness in behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination by Mr. Ransom:

My business is that of consulting civil engineer; office at 30 Church Street, New York; resident in Flushing, Long Island. I am licensed as a professional engineer and as a land surveyor by the University of the State of New York. I am president of Jacobs & Davies, Inc., incorporated in the State of New York, consulting and constructing engineers, offices at 30 Church Street. The present corporation succeeded the old firm of Jacobs & Davies, with which I was associated as a partner, with my former partner, Charles M. Jacobs, as consulting engineer since 1889, and been connected ever since that date with all work of the firm and of the corporation. The corporation of Jacobs & Davies, Inc. is not that of contracting engineers. We have acted as constructing engineers for clients.

I received my college education in England, and immediately thereafter I was articled as apprentice to a firm of contracting and constructing engineers in Cardiff. While associated with that firm, I was occupied in building the

[fol. 1957] Cardiff Junction Dry Dock, 600 feet long, a masonry dock on solid piled foundations; also took part in the building of Lock Gates for Bute Docks at Cardiff, and in the sinking of a coal mine shaft, 2500 feet, at Ynysbwl.

In 1885, I was coal mine surveyor and assistant engineer for John Vipond & Co. Ltd. at Varteg, Monmouthshire. From 1885 to 1889 I was assistant chief engineer, Blaenaven Coal & Iron Co., during which period I built two blast furnaces with regenerator furnace, coke ovens for the recovery of by-probucts, a tyre mill, reheating furnaces, Bessemer steel plant, and was in charge of the quarries and shops of this concern.

I have been engaged in the practice of my profession in the United States from the year 1889 to the present time, being associated with my late partner, Charles M. Jacobs, deceased, and with Jacobs & Davis, Inc., during that entire period.

From 1901 to 1907 I was chief engineer for the Board of Atlantic Avenue Improvement, created under an Act of the Legislature of New York for the elimination of grade crossings on the Long Island Railroad in the City of Brooklyn. During that period I had entire charge of the work of construction of this railroad through the streets of Brooklyn—a double-track structure consisting of two and one-half miles of subway and three miles of elevated railroad viaduct; the depression of freight terminals, and the construction of a passenger terminal, and elevated merchandise freight terminal and warehouse.

In 1898 and 1899 I was chief engineer of the Mountain State Construction Company which constructed the West [fol. 1958] Virginia Short Line Railroad for the carriage of coal from the coal fields in West Virginia. It is now the western outlet of the Baltimore & Ohio Railroad system between Clarksburg and New Martinsville, W. Va. This work involved three tunnels and sixty-two bridges, and the heaviest kind of railroad construction through mountainous country.

In 1889-1900 I was also chief engineer of the Kanawha & Pocahontas Railroad, an enterprise of Charles Pratt & Co., owners of coal lands, to give outlet to the Chesapeake & Ohio Railroad. This was heavy railroad construction through mountainous country.

I was chief engineer of the New York & Queens County Railroad Co., predecessor of the Pennsylvania Railroad tunnels in New York. At the time it was contemplated that the Long Island Railroad would extend into the Borough of Manhattan. I made the earliest investigations for the Pennsylvania Railroad enterprise and members of my firm were responsible for the construction of the North River Division tunnels of the P. R. R.

The contract for the East River Division tunnels of this Company was awarded to a London firm, and I represented them and had charge of their interests in the early organization of the work.

From 1910 to 1913 I constructed for the Chattanooga & Tennessee River Power Company a dam, navigable lock, and hydro-electric power station on the Tennessee River below Chattanooga. This work was taken over by my firm, and completed successfully, after three contracting [fol. 1959] firms had failed in their attempt to carry out the work.

In 1904 as consulting engineer of the City of Detroit I prepared the specifications under which the present water intake tunnel under the Detroit River was constructed.

From 1905 to 1907 I was in entire responsible charge on behalf of the contractors of the New York Central Railroad Improvements at the Grand Central Terminal.

From 1910 to 1916, I was in charge as engineer of the construction of the Astoria Tunnel under the East River at Hell Gate, between Long Island and the Borough of the Bronx, for the Consolidated Gas Company. In 1895 we built for the same interests a tunnel under the East River between Ravenswood and 71st Street, Manhattan. I was the principal assistant engineer (my partner being the chief) of this the first tunnel constructed under the waters of the Harbor of New York.

I was Deputy Chief Engineer (my partner being chief engineer) of the entire work of construction of the Hudson & Manhattan Railroad system of tunnels under the Hudson River, and in New York City and in Jersey, from the inception of the work until its completion. Since 1909 I have been in charge as Chief Engineer.

In 1913 I was one of three members of an engineering board reporting on a proposed tunnel through the Rocky

Mountain Divide. Since 1922 I have been a member of the board of advisory engineers for the Moffat Tunnel [fol. 1960] Commission (a state body) now constructing this six-mile tunnel through the Rocky Mountains.

In 1915 and 1916 I was consulting engineer for the U. S. Realty and Improvement Company in connection with their contracts within the City of New York for the construction of three sections of Dual Subway System.

In 1912 and subsequently consulting engineer of the New Jersey Interstate Bridge and Tunnel Commission in connection with the proposed highway tunnel to New York. From 1919-1922 was a member of the Board of Consulting Engineers for the Commission of the States of New Jersey and New York appointed to build the vehicular tunnel between the States which is now under construction.

From 1911 to 1920 I was consulting engineer to the New York Municipal Railway Corporation in connection with the work of extending its elevated lines in Brooklyn and the construction of its portion of the contract with the City of New York for the Dual Subway System. During this period I was in responsible charge of the work of reconstructing the Centre Street Loop Subway, Manhattan, and the section of the Broadway Fourth Avenue Line, Brooklyn, known as "38th Street Cut," and which was partly subway and partly open cut.

In 1912-1913 I directed the work of constructing a tunnel aqueduct about 18 miles long in the mountainous district of Pueblo, Mexico, for the Mexican Light & Power Company.

[fol. 1961] In 1918 I was one of three advisory engineers engaged by the City of New Orleans to report upon the feasibility and desirability of unifying the railroad terminals on either side of the Mississippi River by a bridge or tunnel crossing of the river at that point.

In 1918-1919 I was engaged by the New York Edison Company to build a new intake and overflow tunnel between their Waterside Station, Manhattan, and the East River.

In 1919 and 1920 I was retained as arbitrator in the matter of the appraisal of buildings, machine tools, etc., in connection with the settlement of a contract cancelled by the U. S. Government; and was appointed a third ap-

praiser to appraise a shipyard at Mobile, Alabama, in an accounting between the U. S. Shipping Board and the Contractors.

In 1915 I prepared plans and submitted report and estimate for the construction of a tunnel under the Volga River for the Moscow-Kazan Railroad Company.

In 1921 I was retained by the West Penn Power Company to report on the stability of the State Line Dam at Cheat River, West Virginia.

Retained by the County of San Francisco as one of two engineers to report on the crossing of San Francisco Bay by bridge and tunnel.

In 1922 advised on foundations for proposed power station of the Brooklyn Edison Company adjoining the U. S. Navy Yard, Brooklyn.

[fol. 1962] Now building new discharge tunnels and repairing existing tunnels at Power Station of Williamsburg Power Plant Corporation.

I am a member of the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Institute of Consulting Engineers, Institution of Civil Engineers (London), The Engineering Institute of Canada, American Railway Engineering Association, American Society Testing Materials, Society of Terminal Engineers, Trustee (Past President) of United Engineering Society which is the holding organigation for the properties of the four National engineering societies.

Awarded the Telford Gold Medal by Institution of Civil Engineers in 1914, for paper on "Extension of the Hudson River Tunnels of the Hudson & Manhattan Railroad Company."

Awarded in 1913 the Norman Gold Medal by American Society of Civil Engineers for paper on "Air Resistance to Trains in Tube Tunnels."

In 1918, I received the Thomas Fitch Rowland Prize from the American Society of Civil Engineers for paper "The Astoria Tunnel under the East River for Gas Distribution in New York City."

As to my connection with the work of building the Ravenswood Tunnel extending from Long Island City to the Borough of Manhattan, and with the work of constructing the Astoria Tunnel under the East River from Astoria

to the Borough of the Bronx, in 1895, we built a tunnel [fol. 1963] under the East River, between Ravenswood and 71st Street, Borough of Manhatten, which was the first tunnel ever completed under the waters of the Harbor of New York. The work was begun, I should say, in 1892. It was carried out during 1892 and 1893; extended under Blackswells Island between Ravenswood in Long Island City, and the foot of 71st Street, East River. That is the Ravenswood tunnel to the Ravenswood plant of the Old East River Gas Company of Long Island City. That was done under the direction of Mr. Emerson McMillan, at that time President of the Company. My relation to this work throughout was that of Chief Assistant Engineer, my partner, Charles M. Jacobs, being the Chief Engineer. The work was originally started under a contract with the firm of contractors, McLaughlin, Riley & Co., under specification and plans which I had prepared. The contractors did not complete the work. When we had driven a little way out from the foot of the shaft on the New York side—on the Manhattan side, we had not started the work on the Long Island City side—we got into a demoralized, decomposed condition of rock, and the contractors vacated the work, declined to carry it out, and it was followed later by law suits. Anyhow, the contractors had no further connection with the work, and we took over the work ourselves on behalf of the East River Gas Company of Long Island City and carried it out to completion for the company.

As to my relation to the construction of the Astoria tunnel under the East River from Astoria to the Borough of [fol. 1964] the Bronx, we were employed by the New Amsterdam Gas Company, or the Astoria Light, Heat & Power Company—I do not know which of them it was—as constructing engineers to carry out the work on their behalf, and we acted as constructing engineers from beginning to end of that work.

That was between 1910 and 1916. I was entirely in charge of practically the whole of that work. My partner was in this country very little during that period, so that I had entire charge of that work.

The tunnel is 4,700 feet long at a depth of about 280 feet below the surface, with 100 feet of water in the chan-

nels overhead. The size of the cross-section is 21 feet by 20.

The line of the tunnel intersects the strike of the rock measures and passes from the hard granitic gneiss on the Long Island side into a dolomitic limestone, and the dolomitic limestone into a schist, very badly sheared and decomposed, and then back into the Hudson River gneiss on the Bronx end; so that there were those intersections and the troubles came in those junctions, the contracts in the different characters of rock. The conditions are usual conditions, but the unprecedented condition was the depth at which we had to tunnel through those measures. The only way in which by any possibility a tunnel could be constructed was to go down deep enough to get into what we believed would be more or less sound solid rock. Due to the water in the channels it was impossible to build such [fol. 1965] a tunnel by air pressure methods, which is used on tunnels that are shallower, but at that depth the air pressure would be valueless, so that the only possible way was to drive right through in that horizon.

The construction of a tunnel between the indicated points was under conditions of practically unprecedented difficulties at the time we commenced the work and laid out the work. The Astoria tunnel connects the foot of 132nd Street and Locust Avenue in the Bronx and the property of the gas company at Casino Point, Long Island City. The Astoria and the Ravenswood tunnels are used for transmission of gas through pipes laid in the tunnels. From the Ravenswood plants, in the case of the Ravenswood tunnel, over into the Borough of Manhattan, and from the Astoria plant, in the case of the Astoria tunnel, to the Bronx.

By the Master:

We simply distributed the mains in the tunnels, but the laying of the mains was done by the superintendent of mains of the company.

By Mr. Ransom:

We lowered the mains down and distributed the mains within the tunnels for the company's own staff to lay them. In the case of the Astoria Tunnel I think we laid the mains

end to end, and they were caulked and aligned by the company's own men.

At irregular intervals I personally visit there, but my associate Mr. Hewitt, visits them every month and inspects the condition of both the Ravenswood and Astoria tunnels. Every month I personally see the reports of the conditions—the memoranda. I go there from time to time as occasion may arise, but not at stated intervals. The firm of Jacobs & Davies, Inc., has been the official inspectors of [fol. 1966] the tunnel since the completion of them. In both the Ravenswood and the Astoria tunnels we have continued the inspection from the time of completion of the work.

I am familiar with the market prices of materials and the rates of pay of labor entering into the constructions of tunnels prevailing in the City of New York on or about June 1, 1923. I have kept myself informed as to the market prices of materials and the rates of pay and labor through bids and contracts which are actually made and through work as to which I have had charge or supervisory relation. The labor required for work in constructing subaqueous tunnels is of a special class, that is quite limited in numbers in this district. The laborers are not altogether of a selected class, but the efficient and competent labor is very much selected. It is a case of education with them. There are decided difficulties in the work of building river tunnels, requiring constant watchfulness to avoid accidents and hazards arising from the nature of the work, and being in the dark, so to speak, and all under artificial light makes a condition that is more onerous than outside work, and usually most of this work is pretty wet work. The rates of pay for tunnel labor as compared with outside construction work, are somewhat higher.

[fol. 1967] At the request of the East River Gas Company of Long Island City, I made an inventory and appraisal of these two tunnels as of June 1, 1923. I ascertained and computed the dimensions and quantity of material. I applied unit prices to the indicated quantities, and the unit prices were all taken as calculated as of June 1, 1923. In my opinion, such prices for material and labor entering into the tunnels were the reasonable prices prevailing as of June 1, 1923. I made the appraisal as though I were

going to be the contractor to carry out the work for the company or owners for whom I would be working, or for a general contractor if there were a general contractor. It is a contract figure for the specific work.

As the result of my appraisal, I prepared schedules which are shown to me, setting forth the details of my inventory and appraisal of each of the tunnels. In this appraisal I included 7% of the estimated amount representing field engineering that would be done by the contractor, which includes the preliminary investigation, design, survey and supervision during construction. I did not include in my appraisal any cost for legal expenses or for administration expenses, land and easements, taxes, equipment of shafts and tunnels, head houses, cost of financing or cost of money and interest charges.

It is a fact that during the actual construction of these two tunnels, unforeseen conditions developed which created difficulties that cost large sums of money to overcome, in both the Ravenswood tunnel and the Astoria tunnel. In [fol. 1968] making my appraisals as of June 1, 1923, I did not include any allowance or provision for the cost of these unforeseen contingencies as they actually developed at the time the tunnels were built. I assumed that we had complete knowledge of the conditions and carried out the work as though under a specification and contract knowing the conditions involved. I made no allowances for the actual difficulties that were encountered in actually carrying out the work at the earlier dates.

Leaving out the question of present prices of labor and material, I assumed the doing of the construction work as though I were doing the work to-day, with the present knowledge, and as though the work were begun and completed on the same date; that is, as of the same period, the same time, and upon the tunnel structures as they actually are, and not upon the unforeseen things which I developed in the actual construction.

These schedules correctly set forth the inventory and appraisal of the tunnels as testified to by me. In my opinion the amounts stated as the total estimated cost of reproduction of the Ravenswood tunnel and the total estimated cost of reproduction of the Astoria tunnel, as of June 1, 1923,

represent the amounts of the reasonable and necessary cost of producing these tunnels on a subcontract basis as of June 1, 1923.

By the Master:

These appraisals include the shafts. The hole in the [fol. 1969] ground right through is represented by these estimates. The head houses are not included. The stairways and hoisting plant that they have installed for operation of the tunnels are not included. The pipes are not included. It is the tunnel itself, the structures of the tunnels alone, which are covered by these estimates, and exclusive of mains or pipes or anything in the tunnel.

By Mr. Ransom:

And exclusive of the equipment of the shafts or tunnels.

(Astoria appraisal, consisting of two sheets, was received in evidence and marked Plaintiff's Exhibit No. 836; Ravenswood appraisal consisting of two sheets was received in evidence and marked Plaintiff's Exhibit No. 837.)

In my opinion, the present reproduction costs of the Ravenswood and Astoria tunnels, upon the basis used by me in my appraisal of June 1, 1923, and including the same elements, would be somewhat higher at this time than the reproduction cost as of June 1, 1923, on account of the arbitrary and absolute dictation of labor, and the fact that pending in Albany now there is legislation which regulates the hours of employment and rates of pay to be used in tunnel work, and I think the disturbed condition and the inadequate volume of labor obtainable in this district makes the tunnels somewhat higher in cost than they were as of June 1, 1923.

By Mr. Donnelly:

A recent act that was presented—I do not know what has happened to it—regulating the hours of labor and the rates [fol. 1970] of pay in tunnel work. I do not know that the act has gone upon the statute books and is now the law, but the general condition and the effect upon labor has been to

stiffen the demands of the unions in respect to tunnel labor; and that is unquestionably the fact, that there has been a stiffening in the demands of labor due to the presentation of acts. I do not know whether they have passed or not.

By Mr. Ransom:

I think if the work was carried on over some years that it would take to construct, it would be very questionable what the rates of wages would be, and any contract carried on as of this date and awarded as of this date would be likely to carry with it somewhat higher rates than are assumed as of June 1, 1923.

During my examination of these tunnels, I found the maintenance has been excellent throughout in both the Ravenswood and the Astoria tunnels. They have been inspected regularly by us and anything that was needed or anything that was observed, the attention of the company was called to such matters; the drainage has been maintained in good shape, and painting, and all other work, wherever such is needed, has been carefully carried out. They are in fully as good condition now as when they were built, both tunnels. For the most part, these tunnels are constructed through solid rock. They have no wearing parts. Provided proper inspection and maintenance is given to these tunnels, they are not subject to appreciable deterioration.

[fol. 1971] H. M. Brunbach, a witness in behalf of the plaintiff, resumed the stand.

Cross-examination continued by Mr. Donnelly:

In the vouchers that have been produced at the request of the Attorney-General I find one number 1305, which is dated January 11, 1923, and calls for two letter-file cases. This voucher is charged to general office supplies and expenses, which is an operating account. I am unable to say whether the two letter file cases an expectancy of life of more than one year. I should not under the Uniform System of Accounts, Section 4, page 5, have charged that item to fixed capital. The file cases and other matters of office supplies are not by our company charged to the capital

account. They are replacements of things worn out and discarded. I do not know that the Uniform System of Accounts provides that "capital which has an expectation of life in service of more than one year (exception being made of hand and other small portable tools liable to be lost or stolen)" is called fixed capital. It is a question of interpretation, as to what is capital. We do not construe the replacing of furniture, desks, pens, match boxes, blotters and all that sort of thing as items properly to be capitalized, and we do not pretend to do it. I do not understand that that provision of the Uniform System of Accounts provides for our charging such items as those included in Voucher 1305 to fixed capital account. I am likewise familiar with Section G132 of the Uniform System of Accounts, headed "General Equipment" which provides as follows: "Charge to this account the cost of all equipment of general structures as provided under the following heads; General Office Equipment. This includes the cost [fol. 1972] of all equipment of general offices such as desks, chairs, tables, movable safes, filing cases, drafting room equipment, and other like office appliances and equipment, also engineering instruments." I don't understand from those two provisions, the one being Section 4 on page 5 and the other Section G122 on page 12 of the Uniform System of Accounts, that they require us to charge equipment of the character indicated by Voucher No. 1305 to fixed capital, instead of operating. Voucher No. 1401 which is dated January 11, 1917, related to one Underwood Typewriter, $94.50. I charged the $94.50 for the new machine, less the credit that I obtained from the turning in of an old machine, being net $69.50 to operating expenses, materials and supplies expenses and not to fixed capital. A similar question relative to the equipment set forth in that voucher as asked with reference to the voucher 1305 would receive the same answer with an added thought that this voucher now before us gives us still further evidence concerning what I have already said, because this is simply the exchange of one machine for another. Voucher No. 2427, which is dated January 29, 1923, refers to a Tim calculating machine. I charged that item simply to operating expenses G. O. supplies and expenses, and not to fixed capital.

You asked me the same questions with reference to that item as with reference to the two preceding items, my answers would be the same, simply a replacement of another machine, and my interpretation of the Uniform System of Accounts would be the same as to this item as with respect to the ones preceding. Voucher No. 3833, dated January 31, 1923, refers to one rack of steel shelving for [fol. 1973] store room and that was charged to operating expenses G. O. supplies and expenses and not to fixed capital and my answer would be the same as with respect to the preceding items. Voucher No. 3835 which is dated February 14, 1923, refers to one oak revolving chair which was charged in like manner as were the preceding vouchers, and my answers to questions previously asked with reference to my interpretation of the Uniform System of Accounts would be the same in regard to this voucher, merely a replacement. Voucher No. 4214, dated March 1, 1923, calls for oak lumber and panels which was charged to operating and my answers made to questions regarding the previous vouchers would be the same if repeated as to this voucher. Voucher 4437, dated February 24, 1923, calls for one L. C. Smith Typewriter which was charged in like manner as the preceding items in the vouchers asked about, less a credit for an old machine turned in, and the net bill charged to operating expenses. My interpretation of the Uniform System of Accounts with respect to that item would be the same as I have already testified with respect to the preceding items asked about.

Voucher No. 3438, dated February 12, 1923, calls for nine letter file units likewise charged to operating expenses and not fixed capital and there my answers would be the same as those previously indicated.

Voucher No. 5237, dated February 9, 1923, calls for one addressograph, attachments, etc., likewise charged to operating expenses and my answers as to my interpretation of the Uniform System of Accounts with respect to that item [fol. 1974] would be the same as previously indicated.

Voucher No. 5487, dated March 6, 1923, calls for two desks and four chairs which were charged as were the preceding items and my answers there would be the same as I have made before.

Voucher 6021, dated March 13, 1923, calls for one desk which I charged, as I did the preceding items, to operating expenses, and my answers would be the same as made with respect to the previous ones.

Vouchers No. 6894, dated March 17, 1923, calls for filing cases and that would likewise be charged to operating expenses and my answers there would be the same. That was a replacement. These items which I have indicated are replacements, were articles of furniture that took the place of others discarded whenever we set up a new office or a new department, and are required to furnish it, the first furnishing is charged to fixed capital. Thereafter as things wear out the burden of attempting to keep the detail record of the withdrawal of a desk or a chair or a lounge or carpet or rug would be so burdensome in our operating expenses, thereby burdening the consumer, that we do not attempt to do it, and those replacements were charged to the operating expenses.

Voucher No. 7427, dated March 31, 1923, calls for two rugs which were charged the same as the preceding ones and my answers would be the same as made with respect to the preceding ones.

Voucher No. 8121, dated March 31, 1923, calls for linoleum floor covering of two rooms and my answers both as to charging and as to interpretation of the Uniform System of [fol. 1975] Accounts would be the same with respect to that.

Voucher No. 10243 dated January 8, 1923, calls for one letter size filing case, two drawers and a lock charged in like manner and my interpretation would be the same as with respect to the preceding items.

Voucher No. 10674 dated April 14th, 1923, calls for rugs and carpets and there my answer would be the same.

Voucher No. 11267, dated May 11th, 1923, calls for one mahogany roll top desk and my answers would be the same there.

Voucher No. 11316, dated May 11th, 1923, calls for two desks and four chairs and my answers would be the same there.

Voucher 14772 dated June 18, 1923, calls for one desk and one chair and I would make the same answers with respect to that.

Voucher No. 15395 dated June 25, 1923, calls for desks with the same answers there.

Voucher No. 18058 dated August 3, 1923, calls for two Monroe Machines, $600 less allowance of $130 on two machines taken in exchange. They are Monroe Calculating Machines, and the same answers you have made applies to that.

Voucher No. 20430, dated September 7th, 1923, calls for letter files and I will make the same answers there.

Voucher No. 22944, dated October 6, 1923, calls for one loga calculator and my answers would be the same there.

Voucher No. 23532, dated October 15th, 1923, calls for linoleum tops for cases and the same answers would apply there.

Voucher No. 24935 dated October 26, 1923, calls for one Singnagraph and the same answers would apply.

[fol. 1976] Voucher No. 25719 dated October 16, 1923 calls for two mahogany cabinets $250 altering mahogany table $16.25 and the same answers there.

Voucher No. 27064 dated November 19th 1923 calls for metal cabinets and the same answers would apply.

Voucher 30661, dated November 20th, 1923 calls for one Wales Adding Machine and the same answers would apply as to that.

By the Master:

There are two alternatives in the matter of accounting. One may either keep a detailed record of all these small items of office equipment, and withdraw them from the fixed capital, or charge them to fixed capital when first bought and any new ones would be charged to our operating expenses. If we set up a new office or a new department, we capitalize it, but otherwise we charge it to operating expenses.

By Mr. Donnelly:

Our Exhibit No. 820 on behalf of the plaintiff in this case being Schedule AA and the Exhibit 821, referred to as Schedule BB, are both entitled "Cost of property of the

Consolidated Gas Company, etc. By the word "cost" I meant cash cost. The cost of the property of the Consolidated Gas Company represents what was paid for the property at the consolidation in 1884, plus the actual cash cost since that time. Referring to Plaintiff's Exhibit No. 820 and to the sheet of that exhibit headed "Real Estate 14th Street station" and to the first item on the sheet dated 1884 November 11th, Rowland's appraisal land $1,740,000; the sum of $1,740,000 was the cost to the company set forth in the Rowland appraisal of the land at the east 14th Street station as of the date of organization, November 11, 1884. The opening journal entries of the company, which are here in evidence, will tell the story just how that financing was [fol. 1977] arranged and how the organization was perfected. The record shows that for the land and plants, mains, meters, services, buildings and so forth, taken over by the Consolidated at its organization, they issued its capital stock at par. Referring to the same exhibit No. 820 and to the page thereof which is headed "real estate 11th Street station," the purchase price was $1,763,535.67. This price paid for the land of the former New York Mutual Gas Light Company and was paid for in cash, on a basis of the finding of this Court and with the approval of the Public Service Commission, as to the price. In the prior case before this Court the valuation was determined of that property and the Commission authorized the Consolidated Company to take over that property and pay a price for it—the price set forth in the Court finding. That property was taken over August 31, 1922. The Commission's order authorized us to pay the price found by the Court in the prior case at some date, which at the moment has slipped me, plus net additions brought down to August 31, 1922. I do not refer to Judge Hand's decision in the former Consolidated suit, my recollection is it was a case of the Mutual Company and held before Judge Mayer. It came through the Special Master, as I recall it, and was confirmed by Judge Mayer. There was an appraisal made and testified to at great length in that prior case. Now, just who made it and the exact date of it I am unable to tell you from memory. The figure of $1,763,535.67, set forth in my Exhibits No. 820 is the amount paid for the land, and the land itself has been testified to and identified and put on maps

by Engineer Alrich. The figures representing the value of the plant are contained in Exhibit No. 821, on the sheet of that Exhibit "Plant Account 11st Street station," and [fol. 1978] for the manufacturing plant, we set forth a payment of $3,532,713.92. This figure of $3,532,713.92 is based upon an appraisal made by Colonel Miller plus additions, submitted in the prior case and approved by the Commission with the statement that it should be that appraisal figure found by the Court plus net additions to August 31, 1922. Your accountants can trace that whole transaction right through our books in a very short time. As to the details of the appraisal being on the books, it depends on what you mean by "details." I can spread details out till they are voluminous. The facts are all set forth and the classifications are given. The appraisal in its entirety is not on the books.

By the Master:

By its entirety I mean with all the details of every item of the plant, every sum of money paid and what it is paid for is shown on the books. I have no recollection of the filing by the Company with the Commission of an appraisal made up of a list of the property to be acquired with detailed prices set opposite the different parts of the plant. There was a summarized statement filed with the Commission, and furthermore, the Commission required us to file a copy of every journal of this property.

By Mr. Donnelly:

The figures that I have referred to as of August 31, 1922, would show all that the Mutual had done from the date of the appraisal we are referring to, to August 31, 1922. We bought all of the Mutual's tangible property and if the Mutual bought or owned any property during 1918 and still owned it on August 31, 1922, it would be included in that purchase price. If it was included in the appraisal submitted in the prior case before this Court, I would find it in that group, but if it was acquired by the Mutual sub- [fol. 1979] sequent to the date of that appraisal, then it would be charged into the group of accounts "Additions Subsequent to the Appraisal" brought down to August

31, 1922. For example, if a generator were *b*ut in in 1918 by the Mutual, it would be included in its fixed capital in the appropriate classification as given by the Commission, it would not be set up separately but in the manner that the Public Service Accounting system requires us to set it up. Then from that lump sum there would be no way to identify from book figures themselves specific particular articles of property installed, whenever they were installed; we would refer back to the vouchers where we paid for that particular item of equipment. In every kind of accounting we have got to go back to our underlying data to get detailed costs and in the case of the Mutual acquisition it is contained in the court order and the Commission's order. We would have to go back to the record of that prior case and the papers filed with the Commission. All that was set forth by their own classfication, part of the papers in that record. All those things were checked by the Commission at that time.

We charge all construction expenditures to the proper capital account to which they are applicable. It is not true that the Commission requires us to carry those items in an account entitled "Unfinished Construction." I am thoroughly familiar with this provision of the Uniform System of Accounts which was in effect for part of the time covered by the items included in Plaintiff's Exhibit No. 821, entitled "Plant Account 14th Street Station," the provision of the Uniform System of Accounts being as [fol. 1980] follows, paragraph 18 page 69:

"The work or job order shall accumulate current charges for labor and material applied to the particular job or project until its completion in such completed project. The aggregate amount of such charges on all open work orders shall be carried in a Suspense Account designated "Work in Progress" until transfer can properly be made to the permanent accounts; provided, however (1) that the cost of additions shall be carried until the completion of the work in a fixed capital account to be designated "Unfinished Construction," and (2) That the cost of work involving the removal or retirement of any fixed capital shall not be carried in suspense beyond the end of the next succeeding fiscal year without the permission of the Commission, and (3)

that the cost of repair work shall not be carried in suspense beyond the end of the current fiscal year.

(Witness refers to Plaintiff's Exhibit No. 821.)

I am thoroughly familiar with all that you read, but you did not read far enough. On page 70 under "Note B" appear these instructions:

"Requirements of the use of the above mentioned clearing accounts will be suspended in the case of a company which satisfies the Commission that the system which it has in use for recording construction expenditures produces similar results in respect of certain essential matters;" which are all listed here. We did so satisfy the Commission, and I did it personally years ago. We did not use the work order system as such. We charge all of our expenditures for capital direct to the capital account. I never had a letter from the Commission complaining or calling my attention to the fact that I had not made the entries in accordance with the provision. I would not deny that such letters were written. They would presumably come to my desk and I would be familiar with them. In making retirements from Astoria, I did not credit a part of the engineering and other overheads applicable thereto. [fol. 1981] In other words I do not recall ever having received any instructions or directions orally as to how my accounts should be treated. I am unable to say there *there* were some water gas sets taken over at the time of consolidation in 1884. I have enumerated in my schedules certain plant equipment that were taken over. There may have been some water gas sets included in the Rowland appraisal figures, which constitute the opening entries in the books of the Consolidated, but I would not like to say so from memory without seeing the record before me. It is a fact that those water gas sets were entered at the figures represented by the Rowland appraisal. I could not say that those water gas sets have practically been redesigned and rebuilt since they were taken over by the Consolidated in 1884. That is an engineering question. We are improving our apparatus continuously. If those improvements were of any considerable size we would withdraw the old apparatus at the price which it cost the company and capitalize the new. The size would be a factor which would de-

termine that procedure, if it is a complete unit. To retire the improvements on property which have been made since the property was taken over at the time of consolidation we follow the same method, except that the original cost is determined by an inspection of the books of account kept since 1884. If it was a piece of property that was taken out at the appraisal figure; if it was acquired subsequent to consolidation it would be taken out at the cost as shown by our books of account. That applies likewise to every piece of plant equipment; that is retired from fixed capital. If a particular piece of plant equipment that was taken over at [fol. 1982] the time of consolidation had some improvements made to it since the time of taking over, we would charge the cost of those improvements to fixed capital. When the apparatus was put out of business, that was shown in the inventory at its original cost plus the cost of any improvements made to it. It is not a fact that when a piece of apparatus went out of existence the figure at which it would be retired was its original cost without making any allowance for the cost of the improvements. The improvements when made to plant equipment or apparatus are charged to fixed capital, in such a way as to make those items of charge identifiable upon our books. I filed a schedule here, Schedule BB, full of all kinds of construction work. It has been going on for 40 years. Everything in that schedule is charged to the fixed capital account. I am on the first detailed sheets and find here on the 14th Street station, which we discussed at length this morning, the Rowland appraisal $1,706,445, and following it in each of the years a detailed record of the improvements made at that plant, the additions to various items, all listed by projects, and added to the original cost of the property and brought down year after year and continued right down to the end of December 1923. On the credit side there is a record of any withdrawals of fixed capital and those figures on the credit side represent the cost at which the property was retired plus the cost of any improvements that had been added to that piece of retired equipment. $2,312,659.-85 is the balance brought down to January 1, 1899, and the preceding period shows the details of what has happened to [fol. 1983] get that figure. That figure represents the cost of the 14th Street plant to the Consolidated Gas Company,

brought down to January 1, 1899. Any retirements that may have been made have been credited before we struck that balance. With reference to a particular piece of plant equipment that had been retired, including the original cost at which it was retired plus the cost of whatever improvements may have been made to the plant equipment. We would credit the fixed capital account with the aggregate of those two items. Our books are kept in such a way that when the credits are made they identify the cost of the improvement upon which we are making a credit to fixed capital. We set forth the particular thing that is demolished or withdrawn from service describing it in such a way as to identify it, and describing it likewise in such a way that the figure that represents the cost of the improvement is also shown there. Still referring to the sheet of Plaintiff's Exhibit No. 821 and to the item on the left hand side of the sheet Exhauster and Connections under date of 1888, January 1st and assuming the purposes of this question that the exhauster had been retired and some later time the fixed capital would be credited with $20,182.43. Take this particular item, the record shows that during the year 1888 we spent $20,182.43. The record further shows that that was not the total cost of the exhauster and connections, for I find in the year 1889 there was a further charge of $1,094.37. Now, when that property goes out of service or is retired for any reason, the fixed capital will be credited with the aggregate of those two amounts. The fixed capital would be credited in such a way as to identify that particular piece of equipment. The exhausters are [fol. 1984] physically numbered in such a way so that when we have occasion to charge the original cost and the cost of the improvement we are able to say that the cost of the improvement, which is blank dollars, applies to that particular exhauster as distinguished from one of the others. The record of the Construction Department always identifies it by a number, so we can tell what it is he is talking about. The ledgers do not carry the exhauster number and other pieces of equipment are not so identified. You can tell if a particular piece of equipment is properly credited as to the cost of the improvement from the record that comes from the Construction Department which your examiners have been over a thousand times. They always

identify it by the number they know it by in the engineering records and by the number they know it by in the insurance maps, and they will say, "Taken over at consolidation," or "Acquired somewhere about 1890." That is the usual form of wording that comes down from the Construction Department, so we can always identify what particular one they are talking about. You can tell *where* a particular piece of plant equipment has been retired from service, not only what it originally cost, but what the aggregate cost of it was, the original cost plus the improvements, at the time of retirement, and identify in that way that particular piece of equipment.

Schedule BB which is Plaintiff's Exhibit No. 821, and which is entitled Detailed Statement of the Cost of the Company's Manufacturing Plants and Holder Stations to and including December 31, 1923 is made up in such a way as to show the cost of all of the company's plant investment brought down to December 31, 1923. Every improvement [fol. 1985] that we make is an addition to our fixed capital and it is charged to fixed capital and tabulated here under the project. The total cost of a particular piece of equipment is shown in the total footing at the end of the year. This sum shows the total of all the improvements to a piece of equipment. The schedule is supported by the original vouchers, sundry creditors' vouchers, payrolls and material and supplies. This is brought together in ledger form and laid out by projects.

With reference to Plaintiff's Exhibit No. 829, which relates to the Astoria Light, Heat & Power Company's investment in fixed capital, January 18, 1899-December 31, 1923. There is an item on the third page, Real Estate $1,227,997.85 as of June 1, 1923 which is the cost of the Astoria Company's land as of June 1, 1923 as shown by its books of account. I do not know the size of the plot there it is a matter of record and can be determined from the vouchers, where the payments were made, or the engineers have already testified to the acreage.

[fol. 1986] Henry R. Beat, called as a witness in behalf of the plaintiff, having been duly sworn, testified as follows:

Direct examination by Mr. Ransom:

My business is that of engineering and contracting. I am a contracting engineer, and hold the office of vice-president and secretary of the North-Eastern Construction Company, with offices at No. 101 Park Avenue, in the Borough of Manhattan, City of New York, and which is engaged in general construction work. I completed, in 1901, a course in civil engineering which I took at the School of Mines of Columbia University. After graduation, I was employed in the Maintenance of Way Department of the Pennsylvania Railroad Company for about a year, and for the following year I was employed as an estimator by the Perth Amboy Terra Cotta Company. In 1904, I became an officer of the North-Eastern Construction Company and have been the vice-president and secretary ever since. For the past nineteen years, I have been actively engaged in all the departments of my company, including estimating, managing, superintending and designing. I have made contracts for construction of buildings and structures of many kinds used for business, manufacturing, residences and public uses, have designed or supervised the designing. I have [fol. 1987] made contracts for construction of buildings and structures of many kinds used for business, manufacturing, residences and public uses, have designed or supervised the designing of the plans for such buildings and structures, and have bought the materials and employed the labor for the construction work above and superintended the work done.

Among such buildings, with the structural work of which I have been especially connected, are office buildings, loft buildings, factory buildings, apartment houses, club houses, garages, private dwellings, hospitals, municipal bath houses, municipal asphalt plants, municipal sewerage disposal plants, public schools, bridge structures, military cantonements, barracks and other military buildings, piers, pier structures, walks, etc. The cost of the construction work done by the North-Eastern Construction Company exceeds $19,000,000, and the estimates which I have made for construction work, principally of buildings, during 1922

and 1923, amount to $46,000,000, and during the period of my relation to the North-Eastern Construction Company, to $300,000,000.

I have also inventoried and appraised, at various times during the past five years, the buildings and appurtenances of practically all the gas companies in the City of New York.

I have been and am now familiar with the market prices of materials and the rates of pay of labor entering into the construction of buildings and appurtenances in the various [fol. 1988] parts of the City of New York and adjacent territory, including buildings of the kinds owned and used by the Consolidated Gas Company.

At the request of the Consolidated Gas Company, I made an inventory and appraisal of the buildings and appurtenances of that company other than the plant and equipment as of June 1, 1923. I had occasion to become familiar with the buildings of that company prior to my employment to make this inventory and appraisal as of June 1, 1923. I have had several opportunities to know the plant of the Consolidated Gas Company on account of construction work. In connection with my inventory and appraisal of the buildings of the Consolidated Gas Company, I personally visited the locations of the different buildings. Taking first the works, I visited the 11th Street, the 21st Street, 99th Street, 14th Street and 42nd Street works; the stations, situated at Kingsbridge, West 132nd Street, West 131st Street, East 111th Street, West 65th Street, East 63rd Street, West 44th Street, East 17th Street, 15th Street Station, and the miscellaneous locations, buildings, general office building at 15th Street and Irving Place and its annex, West 159th Street shop, 212 West 57th Street office, 2084 Third Avenue office, and the Hester Street office and shop. I had assistants, averaging about a little over twenty men, employed in doing this work of inventorying and appraising the property of the Consolidated Gas Company. I used the regular force of the North- [fol. 1989] Eastern Construction Company as used by me for estimating and construction purposes, as well as additional men that I employed. The men were of my own personal selection or selected by my assistants. They were all working under my direction. Not all of them were

engineers; they were engineers, estimators and assistant estimators, and were familiar with this character of work. I personally supervised the work, gave them instructions as to what they were to do and how, was with them at various times while they were doing the work, and observed whether or not my instructions to them were being carried out by them, and I found that they were, and while I wouldn't say that they always were, yet at the time I got through with them, they were.

As to how I proceeded with the preparation of the inventory and appraisal of buildings and structures of the Consolidated Gas Company, we were employed in 1921 to make an inventory only of the buildings and appurtenances of the Consolidated Gas Company, and for that purpose, and also for the more recent inventory and appraisal, we went to the office of the Consolidated Gas Company and obtained from them a list of the locations and a list of the buildings that the company claimed they owned on these properties. From that information I sent men into the field who took off the quantities of each kind of material as it occurred in the various buildings and from that I made a summary—or myself and my assistants made a summary—of all the different kinds of material and labor necessary to reproduce each of the buildings as they ex- [fol. 1990] existed. I made a list of the quantities of the different kinds of material as to each building. To that list of quantities of each building I applied a unit price as to what it would cost to supply the necessary labor and material to put this material in its place in the building. And from this list of units, multiplied by each of the several quantities, I obtained a cost of each item of each building.

In order to ascertain the quantities of materials that are embraced in my inventory, I made, or had made, actual measurements of the buildings. After the list of the materials in the buildings was finished, I personally visited the buildings and checked the figures which had been prepared by my estimators and engineers working with me. I verified each of the buildings and appurtenances with the list compiled by my assistants working with me, and visited every building, inside in 99% of the buildings, and outside on 100%. The prices and labor rates which I applied to the units of labor and material included in my inventory

and appraisal were those existing June 1, 1923. The work of making the present inventory and appraisal of the buildings and appurtenances of the Consolidated Gas Company was started in the latter part of December and the first of January of this year, and concluded a week ago last Friday night, that is, May 3rd, I think.

As a result of the work which I have described, I prepared a schedule or schedules setting forth my inventory and appraisal of the buildings and structures of the Con-
[fol. 1991] solidated Gas Company, in two volumes (witness producing volumes). These schedules entitled "Consolidated Gas Company inventory and reproduction costs of structures and appurtenances as of June 1, 1923," Volume I and Volume II, comprising my inventory and appraisal of the buildings and appurtenances of the Consolidated Gas Company which are specified therein.

In making up this inventory and appraisal of structures and appurtenances, I assumed the scope of employment of the erectors of these structures and appurtenances on the basis of a sub-contractor working for a general contractor; that is I stated a reproduction cost to a sub-contractor under a general contractor. These schedules show what, in my judgment, was the reasonable cost as of June 1, 1923 to reproduce the buildings and appurtenances on the property of the Consolidated Gas Company on a sub-contract basis. The note at the end of the general summary sheets in each of these volumes, reading "No allowances made in the above for general contractors' expense and profit, administration, interest and taxes, or other undistributed costs during construction," means that I have not included any allowance for general contractors' expense and profit, administration, interest and taxes, or other costs during construction except those specifically noted in the succeeding sheets.

Volume I of my inventory and appraisal in the form here produced embraces the inventory and appraisal of the build-
[fol. 1992] ings and appurtenances of the several works; that is at 11th Street, 99th Street, 14th Street and 42nd Street works or plants.

Volume II in the form here produced shows the balance of the various locations, that is, Kingsbridge holder station, West 132nd Street station, West 131st Street, East

11th Street, West 65th Street, East 63rd Street, West 44th Street, East 17th Street yard, 15th Street station, the General Office Building and its annex, the West 159th Street Shop, the 212 West 57th Street office, the 2084 Third Avenue office, and the Hester Street office and shop.

As an illustration of what I have set forth in these schedules of my inventory and appraisal, and referring to the sheet in Volume I entitled "Consolidated Gas Company, 11th Street works, general summary of costs upon a sub-contract basis as of June 1, 1923," I have set forth a general summary of which the details are set out on the succeeding pages with respect to all the 11th Street works. Under the heading "Structures" on the left hand side of this page, before I have indicated a general description of the particular unit of structures or appurtenances, the letters and symbols in the first column indicate the letter or symbol by which the building is known; the second column is a list of the buildings showing the name of the building. These letters and symbols in the extreme left hand column are used in my succeeding sheets to identify the particular buildings or structures inventoried and appraised under [fol. 1993] that symbol, and the second column represents a brief description of a particular building or appurtenance. In the column headed "Total cost," which is the next column, I have shown the reproduction cost of each building of the 11th Street works, which is a summary of cost, of which the details are shown on the succeeding pages under the letter or symbol which I have shown in the first column. Under the caption "page," I have given a reference to the succeeding page numbers where the details of the inventory and appraisal of that manufacturing building and the details of the particular item of the total cost are set forth. By "total cost" I mean so far as I have covered in this appraisal on a sub-contract basis the items of cost of labor and material in reproducing the buildings.

Now turning to the sheet entitled "Consolidated Gas Company, 11th Street works, Stove Storage Building Y," as of June 1, 1923, that and the next page set forth the details of the first item on the general summary of costs which we have just been discussing. On this sheet in relation to structure Y, the first column is a list of the items of material and work as they occur in that building, which would be

necessary in order to construct it, and I have briefly indicated the nature of such work either as to labor or material. In the second column bearing the caption "Quantity," I have shown there a number which, when connected [fol. 1994] with the third column denoting the unit, gives the number of units of each kind of measure such as cubic yard, linear feet or cubic feet, in which each particular kind of material occurs. Each kind of labor or material which is set out in the first column is computed in some kind of a unit, and the nature of that unit is set out in the third column, and in the second column I have set out the number of units of the particular kind which are to be applied and which I find necessary with respect to the item of materials or work set out in the first column in order to reproduce that building.

In the column headed "Unity Price" I have set out the price of labor and material necessary to put each item here in place in the building. In other words, it contains in some cases only labor and sometimes it contains labor and material. The unit price is the amount necessary to put each unit in place in a building. By "Unit" I mean unit quantity,—that is the cost as of that date of the necessary labor and material to put such a unit in place.

In the last column under the caption "Total Cost," I have shown a multiplication of the number of units by the unit price, which is purely arithmetical, and is arrived at by multiplying the quantity times the unit price.

On the second sheet of the details with respect to Structure "Y," the stove storage building known as "Y" at the 11th Street works, where I have shown in computing upon [fol. 1995] the classified items what I denote as "Field Overhead 7 per cent," that represents the administration, field shanties, telephone and miscellaneous expense, which would occur on the property to properly run that job in the field, including liability insurance, watchmens' salaries and timekeepers' salaries, superintendents' salaries in the field; in other words, that represents necessary field expenses in relation to the classified items. The next item "Building Contractors' Profit 10 per cent" represents the sub-contractors' gross profit on that building. This percentage, in my opinion, is reasonable and usual for a building of that type under those circumstances, and, in my

judgment, the amount thus added for the building contractor's profit is a reasonable charge for the sub-contractor to make in reproducing work of this kind.

The explanations which I have just given as to the summary sheets and the detail sheets apply to other items on the summary sheets and to the other detail sheets throughout these schedules. On the very first sheet of Volume I, entitled "Consolidated Gas Company, General Summary of Costs and page Index of Works," I have summarized the total replacement cost of each of the plants or stations as of June 1, 1923 and have added the page references to show the portions of the following detail sheets on which the details with respect to that particular plant are to be found, that being put down entirely for convenience. [fol. 1996] These schedules in both columns set forth all the inventory and appraisal of the buildings and appurtenances of the Consolidated Gas Company as testified to by me.

(Schedules received in evidence and marked respectively Plaintiff's Exhibits Nos. 838 and 838A.)

By Mr. Ransom:

During my examination of the buildings and appurtenances which I have included in my inventory and appraisal as to the Consolidated Gas Company, marked Plaintiff's Exhibits 838 and 838-A, I found the structures and appurtenances had been adequately maintained through repairs and replacements, and were in good condition, and repairs and renewals and replacements have been made from time to time as noted.

The present reproduction cost of the buildings and appurtenances of the Consolidated Gas Company, on the basis used by me in my appraisal of June 1, 1923, would be slightly higher at the present time than the reproduction cost was as of June 1, 1923, which I have stated in Exhibits Nos. 838 and 838-A.

In connection with my examination of the structures and appurtenances, including the inventory and appraisal as stated in Exhibits 838 and 838-A, I prepared a statement entitled "Consolidated Gas Company, Expenditures Necessary to put the Buildings of the Consolidated Gas Com-

pany in a condition in which they were when new." This [fol. 1997] was prepared as a result of and in connection with the examination of the buildings which I have made, as previously testified to. I have set out in these various items the repairs or renewals or replacements which would be necessary to accomplish the result stated with respect to the different items of the buildings shown in my previous exhibit, and I have shown in connection with each of such items the cost of doing such work in labor and materials. That applies as to broken or missing parts or parts subject to wear that have been worn out. This statement sets forth what, in my judgment, are the reasonable expenditures for those items in order to put the buildings in my inventory and appraisal in the condition in which they were when new, and is a correct statement setting forth these items of expenditure which would be necessary or proper to accomplish that result.

(Schedules received in evidence and marked Plaintiff's Exhibit No. 839.)

By Mr. Ransom:

I have made an inventory and appraisal as of June 1, 1923, of the structures and appurtenances of the Standard Gas Light Company which form a part of the governor and boiler house located at 63rd Street and the East River, and I think that in the same way and with the same staff as I used with respect to the Consolidated Gas Company, as I have testified. I also applied the same unit prices as to materials and labor entering into the materials and labor [fol. 1998] of these buildings of the Standard Gas Light Company as you did to the corresponding labor and materials entering into the buildings of the Consolidated Gas Company. I have set forth my inventory and appraisal in the form of a schedule endorsed "Standard Gas Light Company, Inventory and Reproduction Cost, Structures and Appurtenances, as of June 1, 1923." This is a correct statement of the inventory and appraisal prepared by me in the manner in which I have testified upon the basis I have stated.

I also made an inventory and appraisal on the reproduction cost basis, as of June 1, 1923, of the structures at

the head houses of the Ravenswood and Astoria tunnels of the East River Gas Company of Long Island City. I made that in the same manner and upon the same basis as I have made the other inventories and appraisals of the buildings as to which I have testified, and used the same unit prices where applicable. I have set forth that inventory and appraisal in a schedule entitled "East River Gas Company, inventory and reproduction cost, structures and appurtenances, as of June 1, 1923" and this is a correct statement of my inventory and appraisal of that property of the East River Gas Company of Long Island City, made in the manner in which and upon the basis as to which I have testified [fol. 1999] as to the other properties. I have not included in this any other properties of the East River Gas Company except the head houses. These appraisals represent what, in my judgment, is the reproduction cost of the structures described in them on the sub-contract basis as of June 1, 1923. My previous answer with respect to the cost of replacing such structures at a time as compared with that of June 1, 1923, applied to these properties also, and would be the same.

(Inventory and appraisal of the indicated structures and appurtenances of the Standard Gas Light Company received in evidence and marked Plaintiff's Exhibit No. 840.

Inventory and appraisal of the indicated head house structures of the East River Gas Company received in evidence and marked Plaintiff's Exhibit No. 841).

By Mr. Ransom:

In connection with my examination of the structures of the Standard Gas Light Company at the East 63rd Street station, I prepared a statement of the expenditures necessary to put the building in the condition in which it was when new, and that was made up on the same basis as my previous statements of a similar character, and is true and correct on that basis.

(Statement of expenditures as to the Standard Gas Light Company received in evidence and marked Plaintiff's Exhibit No. 842.)

By Mr. Ransom:

I made out in similar fashion, with respect to these head house structures of the East River Gas Company, normally [fol. 2000] what repairs or replacements of broken parts would be necessary to put those buildings in the condition as they were when new, and having set down the reasonable cost of doing that work, including labor and material, on the basis as to which I previously testified as to similar exhibits in a statement.

(Statement of expenditures as to the East River Gas Company received in evidence and marked Plaintiff's Exhibit No. 843.)

[fol. 2001] New York, May 14, 1924.

Met pursuant to adjournment.

HERBERT W. ALDRICH, a witness in behalf of the plaintiff, recalled.

Direct examination by Mr. Ransom:

I have prepared certain diagrams showing the locations of the land of the East River Gas Company, where the tunnel head houses are situated. I checked the diagrams against the deeds and the tax maps, in the same manner which I have previously testified.

(Deeds to the East River Gas Company of Long Island City covering 132nd Street near Locust Avenue, the Bronx, known as Block 2583, Lot No. 450; property at 71st Street and Avenue B, now Exterior Street, known as Block 1482, Lot No. 27; property in Winthrop Avenue near the East River, Astoria, Long Island, known as Block No. 850, Lot No. 2; property conveyed by the East River Gas Light Company of Long Island City to the East River Gas Company of Long Island City; and property conveyed by Mary Husband to the East River Gas Light Company, Ravenswood, Town of Newtown, County of Queens, known as Block No. 357, Lot No. 1, were received in evidence and marked, respectively, plaintiff's Exhibit Nos. 845, 846, 847, 848, and 849.)

[fol. 2002] By Mr. Ransom:

Each of these diagrams correctly describe the boundaries of the land according to the deeds and other instruments in evidence, relating to the land covered by the respective diagrams, in so far as the property conveyed by the instruments is co-extensive with that shown by the diagram.

(Diagram received in evidence and marked Plaintiff's Exhibit No. 850.)

The next sheet which is shown to me, showing block 1482, lot 27, or a portion thereof, in blue tint, property between East 71st Street and East 70th Street, on Exterior Street as it is now called, adjoining the East River in Manhattan, is the western terminus of the same tunnel. It correctly shows the metes and bounds of the property occupied for that purpose at that point.

(Diagram received in evidence and marked Plaintiff's Exhibit No. 851.)

By Mr. Ransom:

On the next sheet I have shown both termini on the land occupied by the head houses of the Astoria tunnel, the one at the left hand being the situation of the Bronx head house, and the one at the right hand side the terminal at the Astoria plant in Long Island City.

(Diagram received in evidence and marked Plaintiff's Exhibit No. 852.)

[fol. 2003] By Mr. Ransom:

A further diagram of property located in East 132nd Street between Locust Avenue and the East River, in Block 2583, Lot 450, shows the additional land acquired by the East River Gas Company from the plaintiff, December 18, 1923, to provide space for the building of a pumping station to be used in connection with the tunnel.

(Diagram received in evidence and marked Plaintiff's Exhibit No. 853.)

(The witness testified to the buildings and improvements located in Lot 450, Block 2853, on East 132nd Street east

of Locust Avenue, and in Block 850, Lot No. 2, Winthrop Avenue, and Long Island City, in Block 1482, Lot 27, on Exterior Street and East 71st Street, Manhattan, shown on Plaintiff's Exhibit No. 851, in Block 357, part of Lot 1, on Webster Avenue, Long Island City, shown on Exhibit No. 850, shown on Plaintiff's Exhibit No. 852; as to the use made of the buildings and improvements of the East River Gas Company of Long Island City, as of June 1, 1923 and as to the changes in such buildings and improvements or in their use since then.)

All these buildings, structures and improvements, concerning which I have testified, have been well maintained, and the repairs which I have described as routine repairs have been made.

[fol. 2004] Francis K. Stevens, a witness in behalf of the plaintiff, recalled.

Further direct examination by Mr. Ransom:

I am familiar with the value of these properties indicated on Plaintiff's Exhibits Nos. 850 to 853, inclusive. I have been requested to make an appraisal of these lands as of June 1, 1923, to state their value unimproved. I have formed an opinion as to the value of these plants unimproved as of June 1, 1923.

The market value of the lands described in these documents unimproved as of June 1, 1923, is as follows: Block 1482, Lot 27, southwest corner of 71st Street and Exterior Street, shown on Exhibit No. 851, amounts to $54,000. I used a unit of value on Exterior Street of $9,000 and on 71st Street of $8,000. I added forty per cent for the corner and ten per cent for size.

My next parcel, Block 2582, Lot 450, in the Bronx, shown on Exhibit No. 853, the which they owned before and on June 1, 1923, Lot 450, is valued at $7,000.

With respect to the property in Long Island City, Block 850, Lot 2, shown on Exhibit 852, the value as of June 1, 1923, unimproved, is $900.

With respect to the property in Long Island City, Block 357, Lot 1, the value as of June 1, 1923, unimproved is $2,500.

With respect to the parcel in the Bronx, Block 2583, Lot 450, which is valued at $7,000, I used a lot unit of $5,000 and [fol. 2005] computed it as in the shape that it is. With respect to the parcel in Long Island City, Block 850, Lot 1, I used a unit of $500 for a block 25 by 100 and computed according to its shape. With respect to the property in Long Island City, Block 357, Lot 1, the part shown in the blue tint, I used a unit of $2500 for a lot 25 by 100. I think 72nd Street had grown in value and I think that the Ravenswood property has enhanced in value since June, if anything.

F. K. Stevens cross:

In August 1923, I was asked to appraise the East River Gas Company's and the New Amsterdam properties. I had made my valuations at the time that I had previously testified so that if I were asked about them I would be prepared to testify about them then. I completed them about October 1, 1923. In other words, when I appeared here on the prior occasion before the present Special Master, if I had been asked these questions I would have been able to make these answers. I had my valuations ready. I have the assessed valuations on those parcels as far as I could get them, for 1923. I have just received the record of 1924, but I have not got the 1924 assessments with me. They are in my office. The assessed valuations, of the land unimproved on Block 1482 Lot 27 for 1923 was $40,000. I do not know if there had been anything in the assessed valuation for 1924. I have not got it. The same information applies to Block 2583, Lot 450. I can give it either for 1923 or 1924. That block was assessed as I remember, [fol. 2006] for 1923 as a whole, including running from Locust Avenue to the East River—not the block, but that is the southerly half of the block assessed as a whole, and I think it was assessed at $100,000. I would not swear to it. Of course, that would not give any idea of the assessed valuation of the parcel.

I have not the assessed valuation for 1923 of the land unimproved, separately of Block 357, Lot 1.

I gave to the assessed values, in arriving at the valuations which I placed on these parcels, the same consideration I gave them in the former appraisals that I made,

I looked them up as a matter of interest, that is to say I looked at them. I did not make some determination in my mind as to whether or not I accept them as representing the fair market value of the land. I looked at them and if they agree with me I think they have been well assessed, and if they do not I pass them by. It is a mental process.

The dimensions which I assumed in making my valuation of Lot 2 of Block 850 was a frontage on Winthrop Avenue of twenty feet and the rear lines and side lines are as shown on the exhibit there. The number of square feet in the parcel is approximately 6,422 square feet. I valued it at $900. This property is part of Block 850 and opposite the blocks that I appraised on the southerly side of Winthrop Avenue. In other words, the description that I gave in answer to the question as to what sales I took into consideration in making my valuation on the previous occasion when I testified here would apply to this lot 1 of Block 850. The same thing does not hold true of Lot 450 of Block 2583. I did not testify to any property belonging to the Consolidated Gas Company of property in this section.

In arriving at my valuation of Lot 450, Block 2583, I took into consideration quite a number of sales that have gone on in that general district. I am a director of the Port [fol. 2007] Morris Land and Improvement Company which owns a good deal of property in this section. In fact, we sold the northerly half of this block of the Consolidated Gas Company System, together with the Schaffer property. That was in 1918. Then we sold the block from 132nd Street to 133rd Street, Locust Avenue and Walnut Avenues. That we sold through a dummy to the same system. We owned a waterfront further above there at 136th Street, I think—136th to 137th—let me have the map there—and the last sale of any property in that general neighborhood was the block from 133rd Street to 134th Street, Walnut Avenue to the railroad. That was sold last September. 136th Street to 137th Street was the waterfront. We sold that in 1919 or 1920. Lot 455 of Block 2583 is known as a waterfront block but it is not physically facing on the water. I valued it on the theory that it possessed waterfront value, as part of a waterfront block. It has, according to the deed, which I think is in evidence, the right to use

waterfront together with—in lieu of the right to have the railroad tracks go over part of its land. I mean it has the right to use the waterfront in conjunction with the adjoining property. It has water facilities, which are part of it. If this was in another block and was not a waterfront block, I would use a lower unit. I had sales of waterfront property in this immediate vicinity to enable me to reach a fair idea of the valuation; the Schaffer property north of [fol. 2008] this was sold in 1918. They sold the block between 133rd and 134th Street, Walnut to Locust, and then between Locust and the river from the south side of 133rd to the south side of 134th Street. A very large and nice parcel. I got the options on those two plots and then together with a half block to the south, I started the Consolidated Gas Company System into considering it as a purchase. The sale price of that large parcel was divided for the purpose of the sale into $115,000 for the inner lot and $215,000 for the waterfront, making a total of $330,000. It represented a unit per lot of 28½ lots approximately in the inner plot, at $4,000 a lot, making $114,000 and there were 42.30 lots on the waterfront at $5,000 a lot and that made $211,500.

I figured out in some way the square feet in this Lot 450 of Block 2583. I have not the number of square feet here, because I did not appraise it as so many square feet at so much a square foot. I appraised it by a unit value which brought it down to a lower figure. If I multiply the number of square feet by the unit of $5,000 a lot, I would have come to a much higher valuation than I put on this property. I considered it and treated it as a certain percentage of rear land and then cut those figures approximately $635 to bring it down to an even $7,000 for this piece. On the rear, there was 27 and 17 which would be 44.69, by a depth of 59.32 feet of rear land, and then of course there would be the frontage of 20 feet. There is 4.67 feet of rear land to that lot. I took it as forming the rear land of 132nd Street. It has a frontage on 132d Street. There is 4,851 square feet approximately in that plot; at $2.00 a square foot would be $9,702. I did not value it that way. There is [fol. 2009] more than a lot and half; almost two lots. As I understand it, the Consolidated Gas Company does not own the entire Block 2583. As of June 1st, 1923, I under-

stood that the Consolidated Gas Company owned all the southerly half of that block except this lot 450 and that they were contemplating at that time and negotiating for the sale of these two ends to the United Electric Light Company. By the two ends I mean on either side of Lot 450, and they were to sell the property which they finally did, to the East River, in the center there.

By the Master:

I mean the portion shown on Plaintiff's Exhibit No. 853. The southerly portion of that lot is from the center line of that block to the northerly side of 132nd Street; they owned that; this had already been acquired by the power company.

By Mr. Donnelly:

In June 1923, the Consolidated owned between where Lot 450 is shown on the diagram and the East River. That was my understanding that they still owned it. I understand that it had been sold to the Electric Light Company since June 1st, 1923, both pieces included. I do not know when the deeds actually went through. They were talking about it at that time. In giving my valuation here as of June 1st, 1923, one of the factors which determined my valuation was the fact that the ownership of Lot 450 gave the owner of that lot an opportunity to use it in conjunction with the land between that and the East River. In the deed there is an agreement between this lot and also the land that they have since purchased allowing them to use the waterfront, and they in turn reciprocate by allowing the railroad track to go over their land. I mean to say they are separate agreements, but they are tied up to a certain extent I think in one paper, and so described in one paper. I have read the deed and read the agreements. It was along [fol. 2010] the line of my arguments in 1919 that I think that agreement was entered into. In other words, those elements give the Lot 450 a value as part of that block which is a waterfront block. There are certain privileges that run with this parcel of land, which I took into consideration in giving the value of the land, as furnishing the factors which determined my valuation. I do not think without those privileges it would be worth as much.

The character of the neighborhood in the vicinity of this lot, is a factory location and to the north of this is the big works, on the northwest and east of this property, the land is owned by the United Electric Light and Power Company, which is an enormous plant in itself. They have put up tremendous buildings on it. To the south are storage yards which are being used mor- or less in connection with the building of the new plant over there. To the north of the United Company are factories, waterfronts, the De la Vergne, which is a big manufacturing plant over there; it is all a manufacturing section. There is not much vacant land in that vicinity, that is, that has been purchased within the last two or three years. There were a great many sales through there, but those are the pertinent sales. I disregarded them because I thought they were of no help.

The Block 1482, Lot 27, Plaintiff's Exhibit No. 851, I have given a value of $54,000. There are approximately five and a half lots in that plot, no, not quite five and a half. There are four lots on Exterior Street and that would leave an average of 28 feet on 71st Street. That would be 100 [fol. 2011] by 128. There is one corner lot which faces on Exterior Street and its long line I placed on 71st Street. I added 40% for the corner. There were sales there that I examined and took into consideration in arriving at the valuation which I placed upon that parcel. I think we are selling about $2,000,000 worth of property in this very section at this very moment. The sales that have taken place and were in effect on June 1st, 1923, were: The northerly half of the block between 68th and 69th Streets, Avenue A to Exterior Street, the block which we sold between 67th and 68th Streets, Avenue A to Exterior Street, the southwest corner of 72nd Street and Exterior Street, together with 46 feet on Exterior Street, to the same party immediately south of that corner. That was in 1921. We sold the block in 1920, and Strom's agreement to purchase was entered into, or his option to purchase was entered into in 1922, and he took up his option about a month ago. The price was agreed on before 1923, January 1st, 1923. That price was $220,000. That would represent units there, my units, which would bring up the price to $233,000, but I would not appraise his land with the same unit on Exterior Street that I am using here, for the simple reason

that it stands on a rock. 69th Street is not cut through and his property has no physical connection with Exterior Street, it is 30 feet above the street; therefore we have got to carry in that case a street unit down 69th Street to the end, because there is no connection with Exterior Street. My units on Exterior Street is $9,000. I used a unit of $7,000 on 69th Street, because it is not a cut through street and it ends in a cul de sac. You would find that $220,000 [fol. 2012] is way above those units, my units, so that if I was appraising Strom's piece or that sale and used my units, I would come to below $220,000 the price at which it was sold. Using the actual units that I used on 71st Street, which were $9,000 on Exterior Street and $8,000 on the side street, then it brings up the price of Strom's, and adding fifteen per cent for size against my ten per cent for size on the gas company's property, would bring it up to $233,000. Exterior Street is a public street in use along there, paved, and beautifully taken care of. On the out side is again a wharf street on which many coal companies have erected coal pockets and cranes. Extending on the outer side of Exterior Street between that and the river, the City owns that property. Exterior Street appears to be from this diagram 115 feet wide. I think that is to the East River. Exterior Street, I think, is only 75 feet wide and then there comes a wharf street; it is shown here on this map as being 115 feet in width. The map I have in front of me is supposed to be a city map. As a matter of fact, I think that it is divided there and there is a wharf street of forty or fifty-five feet in width. By a wharf street I mean a street used in conjunction with these coal pockets I spoke about. These coal pockets stand right on the street and are rented by the City to private individuals, and I do not think that the City would do that unless it was a wharf street. That would leave Exterior Street about 75 feet in width. From the curb to the easterly line, there is no demarcation between the wharf street and Exterior, except [fol. 2013] that the pavement is not as good right next to the river as it is on the westerly side of the street. The pavement on the westerly side of the street is the pavement used by people using the Exterior Street itself for traffic up and down the street. 71st Street is one of the few street cut through at that point and is paved on grade, sixty feet

wide. 70th Street is not cut through, 69th Street is not cut through, 68th Street is not cut through, 67th Street and the next through street is 64th Street. There is no access to 70th Street on Exterior Street. 76th Street is cut through. North of 71st Street, 72nd Street and 74th Street and 75th Street are not cut through. 73d Street is cut through.

By the Master:

That would affect the value of this property as compared with the other property fronting on Exterior Street in that it has a use with waterfront which the other blocks have not got as good a use for as this. Take the brewery company, they cut down on the north side of 69th Street and they have grilled entrances on Exterior Street only along part of their frontage. Strom has a lumber yard and has no connection with the waterfront at all. When I say they have no connection with the waterfront, I mean because their properties or the east end of their properties, which are adjacent to Exterior Street, are elevated above the street to such an extent that they cannot reach it without going down in some way. They are at least thirty feet above the level of Exterior Street, and 69th and 70th Street are on a level, thirty feet above Exterior Street.

By Mr. Donnelly:

As to how far back that condition which I have just described exist, in so far as 70th Street is concerned, 70th [fol. 2014] Street runs from Avenue A down to Exterior Street at an entirely different level from Exterior Street. As you go on 70th Street east toward Exterior Street you find 70th Street at the building line is thirty feet above the grade of Exterior Street.

By the Master:

From Avenue A to Exterior Street it would have to be cut down thirty feet to get it to the level of Exterior Street. This is a cross section of 70th Street (illustrating). We will say there are the building on each side and there is the 70th Street level. Down here thirty feet below that there is a wall right across 70th Street at the easterly end, where it joins or is supposed to join Exterior Street. This is all

rock. That is a thirty foot sheer drop just like that (illustrating) and here comes Exterior Street, which is on the level of the river. The buildings stick up here at the foot of 70th Street, particularly the garages (illustrating). The south side is vacant. The grade has been established for 70th Street above Exterior Street. The street is opened and 70th Street is at grade. You can drive down 69th Street and 70th Street right to the wall, and the same condition obtains at 57th Street. They are at grade clear down to the wall, that is the final grade—those two streets. Exterior Street is also at grade down below, at least thirty feet below.

By Mr. Donnelly:

There were other sales in the vicinity of this parcel, Block 1482, Lot 27, than those I have given. We sold the whole block between 67th and 68th Streets, Avenue A to Exterior Street to the Rockefellow Institute. We first purchased it for the Presbyterian Hospital. The southerly block was — [fol. 2015] to the hospital. The south side of 72nd Street and Exterior Street, that is the southwesterly corner I have just mentioned that sale. That is another sale that happened in 1921. The deed went through and part of the price was agreed to in 1916 or 1915, and then the part that Gottfried bought from Strom was agreed to in 1921. That sale had a frontage of 132 feet on 72nd Street and 76 feet 8 inches on Exterior Street. The sale price was $105,000. The improvements included what the owner of the land owned in 1916 and I appraised them at that time for $60,000, so that the sale price represented $55,000 for the land and $40,000 for the building, $45,000 for the building. The same purchaser of that land purchased from Strom a piece to the south of that having a frontage on Exterior Street of 46 feet and running back a depth of 120 feet on the southerly line and that was in 1921. The tenant had put up a two story fireproof garage on that land, a three story, practically and he was held up on that account and he paid $65,000, for all that piece including the garage. At the time he bought it the land was vacant with the exception of one corner on which he put up this garage. He paid Strom $65,000. The land was vacant and then this tenant went and put up his building. Strom had a right to that

building at the end of the lease, but he had put no money on the building and therefore the tenant was really paying that for the land; but Strom, I think, held him up in the purchase price and forced him to pay for his half interest in the building. I would not regard that as a fair criterion of the value of the land. I think it is too high and he paid too much. There was a sale there in January which I did [fol. 2016] not take into consideration except that I was delighted to see that they backed up my figures in January, 1924. That was Strom's lumber yard on 73rd Street and Exterior, 140 by 140. That was an executor's sale for $112,500. There were no improvements there; absolutely vacant land. A private sale, an executor's sale to Strom, who had a lease on the property and then Strom turned around and resold it for $125,000 within two weeks. I did not put down the name of the person, but it is a recorded deed. The property has not been improved since the last sale and is all vacant land.

Since June we sold Avenue A and 69th Street. The deed went through in January, 1924. That was 150 by 150 on the northwest corner of Avenue A and 67th Street. There were no improvements on that, and was also vacant land. A new garage is just being completed on that now. It was sold for a garage site and the dimensions were 150 by 150 and the sale price was $105,000. It was $115,000 and then there was a restriction on the corner which cropped out in the search of the title, against business on 50 feet by 100 on the corner itself. It was questionable whether they could sustain it or not, but the Title Companies would not guarantee that business could be put there, and so after negotiation $10,000 was deducted from the price and the actual price paid was $105,000. The restriction was as broad as I put it; against any kind of business; it was in a factory and business neighborhood. It was a residential neighborhood, and they hoped at one time when the Auchmutys put their buildings over between First and Second Avenues, to make this a residential proposition and somehow or other [fol. 2017] that questionable restriction slipped in on that piece. The rest of the property was not so restricted at all. The restriction that I speak of was contained in some old deed because the sellers did not know anything about it. That went through for $115,000 and then we took off $10,000.

As a matter of fact, the man went ahead and took the bull by the horns and put in a garage on the property and is going to use it for business. It was a public garage. The selling price of $115,000 would represent price units per lot of $11,000 on Avenue A, and giving fifty per cent for the corner and two lots of $8,000 on 67th Street and giving the interior land 2,500 feet of interior land at the same unit as 67th Street, $3.20 a square foot and fifteen per cent for size, would bring the land up to $110,000. In making up my valuation of this Lot 27 of Block 1482 I have thought that the sales which I have mentioned were sufficient to back up my units. I was perfectly satisfied. There are other sales in that entire neighborhood, all to be found in the Record and Guide. I think most of them I have mentioned before. The brewery block of 64th and 65th Streets there to the Rockefellows and that block that we sold for the Rockefellows 67th to 68th Street. In valuing Lot 27, Block 1482, I considered that it was a very usable lot in that section for manufacturing, garages or any business that would be allowed by the zoning law. It is in what is called the unrestricted zoning area, where you could put up properties such as a public garage or anything. You could not put up a slaughter house there. I do not believe you could put up an oil tank there either.

[fol. 2018] Lot 1, Block 357, shown on Plaintiff's Exhibit No. 850, is part of a large block and it is practically in the same ownership. The New Amsterdam Gas Company owns the rest of the block and I have always appraised it before and considered it as part of the block. That was not the factor which determined my valuation here because as part of that I would have appraised it very much higher. I would have appraised it at a very much higher value as part of the whole block. I put a value of $2,500 on there. That is a full lot 25 by 100 and I think it can be sold very easily. We have not any sales in there to justify that; I have sold my property at the foot of Broadway which is just a little north of this property, and then I had an auction sale which I got Mr. Day to conduct, I think we had 250 or 275 lots within half a mile or a mile, anyhow, all of them of this property, at Broadway, and all west of Second Avenue. I think that they were very low, because we have sold pieces since then at a much higher value. I think

there has been a good deal of real estate activity for waterfronts in the neighborhood of this Lot 1 in Block 357. We have sold our property there at the foot of Broadway, or two-thirds of it, and we have held it since 1876 and we have just succeeded in selling it. That was a period of long inactivity. South of this I sold on 76th and 77th Street four year ago the block front there, to the Carbonic Company. Then just before that, about 1916, 1917 and 1918, there were some sales south of this when the Barge Canal bought two pieces on this front within a half a mile of the property each way. These sales are all of [fol. 2019] record. All reported in the Record and Guide. The Degnon property was taken over by the Barge Canal, which I think is within less than half a mile of this property. That was in 1914 and 1915. They condemned that and paid I think it was $2.50 a square foot for it. They paid $1.83 for that piece just above us, per square foot, on the north side of Broadway. That was not a condemnation, that was a private sale between Ward and the State.

Block 357 is a waterfront block. It has about 475 feet or more of waterfront between Webster and Freeman Avenue. It is 478 feet of waterfront between Webster and Freeman Avenue, and then the New Amsterdam owns the block Freeman Avenue and south of Freeman Avenue, that block also. I think it is 150. I valued Block 357, Lot 1 standing alone and by itself, just as it was. Common ownership did not constitute one of the factors which determined my valuation of this parcel. I would have given a very much higher value for it if it had been part of the regular plot. In valuing Lot 1, Block 357, I did not consider that the owner had the privilege of using the water front.

Lot 1, 25 by 100, had several purposes of use to which I considered it could be devoted, and I think really if that was in an ownership different from the New Amsterdam Gas Company, the New Amsterdam Gas Company would pay a very *very* good price for it; they would be one of the principal purchasers. In order to complete the ownership of their land there or rather to add to the amount of land they own there, I do not think the question of $2,500 would be any price at all for that. And then there are other uses; it is rather an unique piece. There is a little

piece of property situated and surrounded by a gas com
[fol. 2020] pany, which employs a great many men. A coffee stand, a restaurant in there, would do a tremendous business, to my mind, there is not any there, though, but if I had it vacant, and the first person naturally that I would offer it to would be the gas company, but the second person I think would be some little restaurant man or cigar stand man, or somebody like that, and I think he would make a tremendous amount of money out of it.

In so far as the 71st Street section is concerned there had been an enhancement of values of property in that neighborhood since June 1, 1923 and also here I think that this is enhanced not necessarily—it is a little hard to explain this. In June of 1923, I did not know of my own sale, we were negotiating, and I was probably of a more bearish feeling in June on property in that location than I am today; because we have now completed our sale at a very much higher value than I used on this property, square foot value or unit value or anything else. I mean even on the entire plot, because I have appraised this as an entire plot. Our sale went through at $1.50 a square foot. I used in June on this property $1.25 a square foot. If I was appraising this property today I would put $1.50 a square foot on this particular block 357, for the simple reason that the last price of waterfront had gone when we sold our property. It was the last piece of developable waterfront from practically Hallett's Cove south. That enhancement of value since June 1st was evidenced by sales in that vicinity. As I say, we have just completed the purchase of Strom's property and we are acquiring a large tract of land in that section. I think it is practically finished now, although the title has not been taken, nor have [fol. 2021] the contracts in all cases been signed. We went in and bought the large parcel of land right in that section. Independent of anything else, absolutely, and at prices way above its real value because we had to pay for accumulating plottage. We bought Strom's property. Strom is now in the market and we offered $15,000 a lot for the brewery site to the Rockefellers at 63rd and 64th Streets, for his own business. Strom is in the lumber business. It does not represent my idea of the value of the

property; it is way above it. It represents what they have to pay to get the property. We were anxious to get it for some undisclosed development, and therefore we were willing to pay the price that we did pay for it. It has taken a great deal of vacant property out of that section. There is not very much vacant property in the vicinity of this Block 357 now. It will be property that will be developed. There is not very much vacant property in the vicinity of Block 357 now, that you can put your hands on, because it has all been accumulated. There is some vacant property, the Rockefeller Institute property between 64th and 67th Streets.

Referring now to Block 357, Lot 1, shown on Plaintiff's Exhibit No. 850, there is not very much vacant land there. There has not been some for quite a time. It is all developed, practically. The piece to the south of Freeman Avenue, which is owned by the New Amsterdam Gas Company, that is vacant land; and of course waterfront properties do not necessarily have many buildings on them, because they are used for stone yards, sand and gravel, and storage purposes. But they are all used and held in strong [fol. 2022] hands today. There is not very much vacant property in the vicinity of 71st Street, that is not being actually used. There is land there without buildings, on it, but it is held for purposes in the future. In so far as the land is improved that is there, the character of the development, outside of the Rockefeller Institute and the brewery, in that neighborhood is general business. There is the typewriter company on 69th to 70th Streets, the Hammond Typewriter Company building, that is used for manufacturing purposes now. There are a good many manufacturing places, bakeries, garages—all the uses allowed under the zoning law, and the other vacant land that we are purchasing for, quite a large tract, considerably over a block, is being held for some purpose of development not yet disclosed. Those blocks contain about 64 lots. I do not think it has waterfront, but it may have. The Strom piece came out in the papers about two weeks ago. This transaction is not of record, the deal — been consummated entirely. There has not been an actual transfer yet. The titles have not closed. There is a date set for the closing of title. In most cases, I do not know

when that is. I mean as to some parcels, but not including the entire area that we purchased.

Redirect examination by Mr. Ransom:

In 1923, I made an appraisal of all of the land of the East River Gas Company together with the New Amsterdam. I appraised them as they are here, because they have always been designated as East River gas properties. With the exception of this Webster Avenue piece, [fol. 2023] I appraised those all between August and October. That one lot I was asked to segregate and appraise finally I think in January or February. I was asked to testify in this case as to these parcels, a week ago or ten days ago, I think it was. I have, with respect to all of these parcels, valued them simply in the dimensions and with the area which is shown as within the proofs in this case; that is, I treated them simply as parcels of the size shown on these exhibits. What I said with respect to the parcel that is included in the New Amsterdam plant at Ravenwood, that, if I were appraising that plant as a part of a larger area, I would give a very much higher value, is true also of the small portion of land that is included within the area of the Astoria at Winthrop Avenue.

[fol. 2024] New York, May 15, 1924.

Met pursuant to adjournment.

Robert Huntley, a witness in behalf of the plaintiff, recalled.

Further direct examination by Mr. Ransom:

I am familiar with the parcels of real property which are shown in Plaintiff's Exhibits Nos. 850 to 853, belonging to the East River Gas Company, and I have been for some time. I was requested to make an apparisal of those lands as of June 1, 1923, so as to state their value if wholly unimproved. I was asked to make such an examination and appraisal within a day or two after I finished my testimony on the other matters to which I testified in this proceeding, and I was asked then to appraise these parcels for testi-

mony also in this case. I have done so, and have formed an opinion as to the value of these lands unimproved as of June 1, 1923, and I have prepared sheets which set out the value of each of these parcels in my opinion as of that date, if wholly unimproved, and the units or mathematical computations which I used to check or confirm my opinion. If I were asked the appropriate questions I would testify to the details which I have set out in these sheets, as follows:

East River Gas Company

Block 1482, Lot 27

Southwest corner Exterior Street and East 71st Street. Size 100.9¾ feet on Exterior Street, 133.4¾ feet on East 71st Street, 124.5¼ feet on the southerly line and 100.5 feet on the westerly line.

[fol. 2025] Calculation of Value

Unit lot on Exterior Street	$10,000
United lot on East 71st Street	10,000
2 lots on Exterior Street at $10,000	$20,000
1 key lot 20% extra	12,000
1 corner lot 50% extra	15,000
Plot of 71st Street, 33.4¾ feet by 100.5 feet x 24.5 feet by 100 feet equals 1.15 lots at $10,000	11,500
Total	$58,500
Plottage 10%	5,850
Total	$64,350

Say $64,000.

East River Gas Company

Bronx—Block 2583, Lot 450

In appraising this property I would consider it as part of a larger plot and would allocate its proportion of value. The particular property which belongs to the East River Gas Company has 20 feet frontage on East 132nd Street between Locust Avenue and East River, it runs back about 46 feet between parallel lines and then in the rear there

is a plot approximately 65.38 x 59.92. It contains in area 4,815 square feet valued at $2.00 per square foot, equals $9,630.

If the entire parcel is to be considered, we have a plot [fol. 2026] fronting 150 feet on East 132nd Street running back on the westerly line 106 feet plus and on the easterly line 78 feet plus, then running westerly 24.58 feet and then westerly along the center of the block 125.42 feet. This larger tract contains the smaller parcel above mentioned and the entire parcel contains 15,272 square feet valued at $2.00 per square foot, equals $30,544.

East River Gas Company

Astoria—Block 850, Lot 2

A plot on the north side of Winthrop Avenue having a frontage of 20 feet on Winthrop Avenue running back 24.52 feet and has on the rear of that a rectangular plot 68.42 x 77.92. In appraising this property, I would consider it as a portion of the large tract of the Astoria Gas Company and would allocate to it a value at the same rate in which I valued the large plot.

This particular plot contains 5,331 square feet which calculated on the basis of $15,000 per acre produces $1,858, which I would say in round figures $1,850.

East River Gas Company

Long Island City—Block 357 & Part of Lot 1

South side of Webster Avenue, 435 feet west of Vernon Avenue, 25 x 100. In appraising this parcel I would consider it a part of the larger parcel and would allocate to [fol. 2027] it its portion of value at the same rate as I would appraise the large parcel.

This plot contains 2,500 square feet which I value at $2.00 per square foot $5,000.

I do not think there has been any substantial change in the value of these particular parcels, in my opinion, since June 1, 1923. There may have been a little stronger tendency to a higher value, perhaps, in the Bronx, but practically these values are about as they would have been last June.

Cross-examination by Mr. Donnelly:

I think that I did see the figures which Mr. Stevens testified to on these same parcels this morning for the first time. I asked Mr. Stevens about one parcel. There were two diagrams and I asked Mr. Stevens which way he had appraised the property, which of the pieces. That is the piece up at 132nd Street in the Bronx. The diagram which I originally had given me was 150 feet front, and afterwards I had a sketch of the small piece, having 20-foot frontage on 132nd Street and with a square parcel abutting it in the rear. My conversation with him was as to which of these things he had been testifying to. And I had not seen any of his testimony and did not know anything about how it had been handled. So I asked him which one of these he treated and he told me he treated the small parcels. "Well," I said, I have got this diagram and that is what I have got." I said, "I guess I will take them both." I did not have any discussion with him as to the figures which he testified to [fol. 2028] upon these parcels. I do not know what he testified to.

On Lot 27, Block 1482, I have given for lots on Exterior Street $10,000, and the same figures for lots on East 71st Street. There were sales that I examined and took into consideration in arriving at my total valuation for that Block 1482, Lot 27, of $64,350. There was the sale in 1921 of the southwest corner of Exterior Street and 72nd Street, 76 feet 8 inches by 75 feet 3 inches by 76 feet 2 inches by 82 feet, with a five-story bakery; the figure at which that was reported sold was $105,000; also 72nd Street, Nos. 530 and 532 East, 498 feet east of Avenue A, 50 by 102 feet 2 inches, with a five-story brick factory, sold by the 530 East 72nd Street Company to Elias Gottfried for $105,000, in April 1921. Then in 1922 this same property was transferred by Elias Gottfried to the Gottfried Baking Company, for a consideration of $146,750. In 1921, there was also a sale on Exterior Street as opened, west side, 128 feet 2 inches north of 71st Street. It runs west 75 feet by south 25 feet 6 inches by west 50 feet by south 20 by east to the Avenue. George H. Storm to Gottfried Baking Company, consideration $40,000. On that there were a one-story and two-story brick building. Those were the only sales which I found in that immediate neighborhood.

The 72nd Street and Exterior Street property was resold in December, 1922, if you wish the exact date. The first sale was $105,000 and the re-sale was $146,750. The sale at $105,000 in so far as the land was concerned, I figured showed $33,500 for the land, and at the time it was resold [fol. 2029] for $146,750. Practically the same improvement was on it. There had been no change in the situation as far as the improvements were concerned unless there were some little changes in the interior, which, of course, I cannot say. That represented $77,750 for the land. An increase of over $40,000 in the land in that short period of time. That is what the sale would represent.

Another sale in 1921 was Exterior Street north of 71st $40,000, a one-story and two-story brick building. With reference to Exterior Street "as opened" that is the way it is described. I think all those lots that front on Exterior Street years ago used to run down to the high water mark along the river. Now the Exterior Street has taken in part of the river and the old line of these lots would have been in the center of Exterior Street; so that in making this description they confined it to Exterior Street as required and opened by the City. Exterior Street at that point north of 71st Street is an opened street with a good Belgian block pavement and there is a good bulkhead on the river front. The Exterior Street itself is about 100 feet wide, from the curb to the bulkhead line. It is probably wider than that, because I noticed that at certain points they have a coal hoisting machine and the building to house it, and at 72nd Street they have a dump. It probably is a little wider than 100 feet from the building lot line on the west side out to the bulkhead.

As I understand, Exterior Street is what is known as a wharf street anyhow. It runs up against the waterfront and it is within the charge of the Dock Department, and I [fol. 2030] understand that they have the right to let some of the surface for the purpose of carrying on waterfront activities. You will find, as I say, in this particular district one or two coal yards located on the property inside of the bulkhead, and you will find a dumping board on there. Those coal pockets along there occupied a part of the bed of Exterior Street. To the extent to which they occupy part of the bed of Exterior Street they prevent traffic up

and down the street itself. I should say that they ran back 30 to 40 feet from the bulkhead. That would leave a passageway for carts and teams up and down Exterior Street of I should say something like 60 feet, 60 or 70 feet. From the curb line over I should think 60 feet. It is sidewalked, quite a large portion of the extent of Exterior Street, from 80th Street down on the westerly side. The sidewalk there is about 12 or 15 feet wide. There is access to Exterior Street through 70th Street and 71st Street, both paved streets. 71st Street is paved with Belgian block.

Suppose one were driving a team along 70th Street, going in an easterly direction on 70th Street he could get across to Exterior Street. At 72nd Street there is a drop. At 71st Street you can go right down from the grade. 71st Street is in such physical condition that it makes easy access to Exterior Street. It is a graded and paved street on the line with Exterior Street itself. I think the same physical conditions obtain with reference to 70th Street. It is my impression that 70th Street is on grade with Exterior Street.

At 72nd Street the street ends in a high embankment which is walled up and there is a bridge or a trestle right [fol. 2031] across Exterior Street from the foot of 72nd Street to a dumping board at the foot of 72nd Street, at the bulkhead. At 70th Street you have not got that same high bank so as to prevent access to Exterior Street. 71st Street I looked at particularly and I know that is graded down, and I walked from there up. 70th Street my impression is runs right down on grade the same as 71st. I visited this piece of property for the purpose of making my appraisal, particularly, last Saturday. I went through 71st Street at that time. I did not go down to 70th Street. I do not know just when previously I had been at 70th Street. I could not tell.

With reference to Exterior Street you swing right down into 69th Street furnishing easy access from 69th Street to Exterior Street. I know that, because I looked down 69th Street and I came across 69th Street from Third Avenue and I walked down—instead of going down direct to Exterior Street I turned north on First Avenue and walked down 71st Street, so I did not go down 70th.

In valuing the Lot 27, Block 1482, I found that the land down there was being used for commercial purposes. I

found shops and garages being erected in the neighborhood. It seemed to me that the buildings which were being erected there at present were being used quite largely for garage purposes. It being unrestricted, it would be usable for that, and desirable.

The period that elapsed between the first sale of that five-story brick factory—the bakery—which sold for $105,000 and then jumped to $146,750 was from April, 1921 to [fol. 2032] December 1922, a year and a half. The first purchaser was a man named Cottfried and then he sold to a bakery company that had been organized in Cottfried's name. In the jump from $105,000 to $146,750 on that particular transaction, the tax assessors assessed the buildings in 1921 for $71,500 and in 1922 they assessed them for $69,000, a reduction of $2,500 in the tax assessed valuation. Personally I should say the buildings would remain about the same. I do not think I would have made any change in them. I examined the assessed valuations on these parcels as they were published only by the Record and Guide. I did not give any consideration whatever to them, except in determining the value to be apportioned to the land. I took off the assessed valuation from the total amount of the sale.

In making up the valuation of the parcels to which I have testified I examined the assessed valuations of those parcels. I do not know what the assessed valuation of the property that I am appraising is. Before I made up my appraisals of these parcels as to which I have testified I did not examine the assessed valuations. I did not know what they were, and I do not know now.

As to how I made up my valuation of $9,630 for Lot 450, Block 2583, I considered that that piece of property was part of a large parcel. I know that the gas company at one time owned this entire parcel and then a portion of it had gone to the United Electric Light and Power Company and that the gas companies still owned 150 feet on 132nd Street, and this was a small parcel used by one of the companies [fol. 2033] for a special purpose. I said that this was really a part of a larger plot and as this little parcel had railroad connections and the right to use the waterfront, it was worth the same value per square foot as the entire tract, and I valued the entire tract at $2.00 a square foot

and said that this particular piece was worth $2.00 per square foot. That was the actual situation on June 1st, 1923, as of which date I have given my appraisal. It was included in a larger plot. I know something of this history of it, that the tract from Locust Avenue to East River along 132nd Street was acquired as one tract. Afterwards a tunnel head was established at this particular point. I know of that because I was asked to express some opinion about it in some proceeding before the Tax Board, I have forgotten just what that was all about, but I remember that there was a heading in there. Then I know that a certain portion of the original large tract went to the United Electric Company, and a certain portion of it was saved by the gas companies. I never knew just what the divisions were among the gas companies, never having been called upon in any way to decide about that, but I do know that last fall, some time I think in December of last year, I appraised two parcels of land on East 132nd Street, which would be one on the east side and one on the west side of this little enclave parcel—for the Consolidated Gas Company. At that time I valued the two small pieces at $2.00 a square foot, treated in the same way I understood at that time that it was merely for an apportioning of tax assessments or something—some sort of apportionment between [fol. 2034] the different gas companies. So that in treating this at this time and valuing it, I simply said the proper way to appraise that is that it is worth so much per square foot, that it could be sold for that.

When I made my valuation as of June 1, 1923 it was not made upon the assumption that this particular lot was part of a larger parcel. I gave it the same value that I would have given to the whole tract. This lot constituting a part of a larger tract. Both this lot and the larger tract of which I assumed it was a part on June 1st, 1923 being I presumed in the same ownership. I think that there has been some transfer in there since June, 1923. It was all gas company property and I think one company transferred some part of this to the other. I think this plot that I valued is not in the same ownership as the plot which forms the larger part. I am not informed about it, that is all. I did not give that any particular consideration. Assuming this was not part of a larger plot, my valuation

would be just the same, whether I valued it alone, separately, standing by itself, or as part of a larger tract.

I examined and took into consideration in arriving at my valuation of $9,630 for this lot a sale in June, 1918, F. & M. Schaefer Brewing Company to United Electric Light & Power Company, on the south side of 134th Street, running through to East 133rd Street, running from Walnut Avenue to Locust Avenue and from Locust Avenue to the East River, comprising about 189,500 square feet, sold for $330,000, no improvements—vacant. It would represent $1.75 [fol. 2035] per square foot. The property has been developed since the sale to the United Electric. It is now covered by a new building of the United Electric Light & Power Company. That is on the waterfront. Also the property which adjoins, a sale made in 1919, of the property on the east side of Locust Avenue, running through to the river, on 135th Street, on the north side. That was sold for $60,000. It was about 46,000 square feet, 101 by 450. That same parcel was leased in 1922 for three years and six months at a rental of $8,400 per year, all taxes and so forth. At the same time they were given an option to purchase the property for $140,000. That was practically vacant property. There was at the time of the sale and old shed, probably 25 feet by 200, and old shed that had been used for a stone yard. It added nothing to the value of the land.

Since that sale in 1919 the land has somewhat been improved. I think there is a good sized shed on there now. That property is a one story shed, used for storage. That apparently was all on the property. The rail has been extended a little, connecting with the railroad. Then we have a sale in 1920, a plot along Locust Avenue to the East River, 136 to 137th Street, 223.10 by 444, sold by the Port Morris Land Company to the Burns Bros. Coal Company for $150,000. It is a little over 100,000 square feet, which is practically $1.50 per square foot. That was vacant property also. Since improved by the Burns Brothers, by their coal handling apparatus. That is also a water front. As I remember at the time that was a very old [fol. 2036] bulkhead,—it was not very well bulkheaded. It had been, but the bulkhead had fallen into decay, and I think I testified on that particular parcel once in certiorari

review of tax assessment, and it was not in very good shape at that time—the bulkhead. That would be back in 1915 or 1916. I think that those are all the sales.

There is a railroad siding right in on the prop-rty parcel, Lot 450, Block 2553.

Whatever sales I gave in arriving at my lot values in my previous testimony would apply to the situation here with reference to this Lot 2, of Block 850 at Astoria. That was valued upon the idea that it was part of a larger tract. I would give it the same value as I would the surrounding property. Part of Lot 2 Block 850 fronts on Winthrop Avenue. An access to the lot No. 2 could be obtained from Winthrop Avenue, over somebody else's land.

Referring to Plaintiff's Exhibit No. 852, which shows Lot 2 of Block 850, that is rectangular in shape and is part of the land that I valued. It has frontage right on Winthrop Avenue and Winthrop Avenue is an open, traveled street.

In making up the valuation of Block 357, Lot 1, which is shown on Plaintiff's Exhibit No. 850, I considered a sale made in January, 1923, of a parcel of land on the west side of Vernon Avenue, running through to the East River, at a point about in the center line of Wilbur Avenue, if the same were extended, Wilbur Avenue being south of Webster Avenue, about through the blocks and north of the Queensboro Bridge. A sale by Clarence Wolff to the [fol. 2037] New York and Queens Electric Light & Power Company which contained about 72,375 square feet of land to the high water mark, 1,200 square feet between the bulkhead line and the pierhead line, and it sold at the rate of $1.78 per square foot for land which was not improved, with a bulkhead. That particular property is, I think, three blocks south from this lot which I appraised. The character of the neighborhood or topography of the country is similar there. That is, to what it is here, practically the same physical condition. That transaction was not for the purpose of acquiring a plot to round out a parcel that was already there. That was vacant land. I think there is an intention of putting some development on it.

In June 1920, there was a sale of the property next adjoining that first mentioned sale, adjoining it on the north. That is to say, it would be on the west side of Vernon Ave-

nue running through to the East River and taking in the north half of Wilbur Avenue if the same were extended. That was sold by the Mechanics Bank of New Haven to Mabel A. Coss. Mabel A. Coss represented the New York & Queens Electric Light & Power Company. The area of it was 77,180 square feet and it sold at the rate of $1.43 per square foot for land which was not improved with a bulkhead and part of the area included was land that was under water. Then there was a sale in 1920 of the property adjoining the last sale quoted, 191 feet on Vernon Avenue, running through to the East River, and taking in the land between the bulkhead line and the pier and bulkhead line as established, Mayer W. Cooper and Julius Schieffelien to the New York & Queens Electric Light & Power [fol. 2038] Company. The consideration was $130,000, and the area was 115,469 square feet, and the sale was at the rate of $1.13 per square foot. That was water front, but it was very bad water front at that particular point. There happened to be an outcropping of rocky ledge, which would make it almost an impossibility to use it for water front, on this particular piece.

The last two sales I quoted were the first sales. They were in 1920. In 1923 they bought another piece adjoining at the south—the first sale I happened to quote. If there was any rounding out it was the last sale to increase the area.

On the first sale I gave here, which was in 1923, the land involved in that sale ran down to the East River. Then I considered a sale in 1923 of the land on Vernon Avenue at the Queensboro Bridge, the west side of Vernon Avenue, which did not run down to the river, it being separated from the East River by the land purchased by the City for a public market. It had approximately 650 feet frontage on Vernon Avenue and a depth of 394 feet, those dimensions being slightly irregular. That was by the Bradly Construction Company to the Panther Motor Company, sold for $350,000 but the sellers kept the award for the opening of the street so that really what the people paid was $302,000. The award was $48,000. That contained about 244,000 square feet, at the rate of $1.25 per square foot. There were sold old hollow tile brick stabling on there. I do not think that they considered them at all

[fol. 2039] in the transaction, because the people intended to do a certain improvement for motor business. Then, in 1920, we found on the west side of Vernon Avenue, about 100 feet north of Webster Avenue, a sale of a plot, 49 feet by 200 feet, of a two-story brick building, sold for $13,500. That would make the land valuation $7,000. The assessment was not stated at that time, and I have no way of getting at the assessment. It would be hard to say. In 1923 it assessed the building there at $10,000 I doubt if it would have been assessed for anything less than that in 1920, and I did not have occasion to look it up. I just saw that sale—of its having been sold. Now I happened to get the 1923 assessed valuation on that parcel, I just happened to notice it. My man looked it up. I did not even know that I had it. That is the only way I am interested in the assessed valuations in so far as they relate to sales of other parcels. When I find a sale and I find a quoted assessment of the land and building, I very frequently use the assessed valuation for the building and deduct from the amount of the sale to see what is left for the land, for the purpose of getting at the land value.

On the block in which Lot 1 of Block 357 is situated Webster Avenue is 75 feet wide, I think. I do not think it shows on this diagram, which is Exhibit No. 850. It is paved right down to the dock with asphalt pavement and in this block it is Belgian block.

Vernon Avenue is a paved street with a trolley running on it. It has been a trucking street and has been paved for [fol. 2040] twenty years, at least. It is 75 feet wide I think. My valuation of Block 357, Lot 1, was based on the idea it was part of a larger tract. I would give it the sale valuation. I would allocate the same proportionate value as on another plot. It is all used for gas purposes at $2 a square foot. All of it is used for gas purposes. If it was used for any other purpose than gas purposes, it would have a value of $2 a square foot. If it were carved out of here I think I could sell it for $2 a square foot quite handily.

Redirect examination by Mr. Ransom:

With reference to Exhibit No. 259, which is the Astoria plant property of concerning which I gave in my previous testimony a value for Block 850, Lot 1, the figure which I

then gave as the value for Block 850, Lot 1, did not include the value of the land comprised in Block 850, Lot 2. The calculation of the square footage on the land area in Block 850, Lot 1, was exclusive of the area of Block 850, Lot 2, and I gave my valuation of Block 850, Lot 1, on that basis when I was on the stand before and I gave my valuation of Block 850, Lot 2, the same unit price which I had assigned to Block 850, Lot 1. The same thing is true with respect to the unit price for the larger area and the unit price for the smaller area at the New Amsterdam plant site which is on Webster Avenue.

[fol. 2041] COLIN C. SIMPSON, a witness in behalf of the plaintiff, recalled.

Further direct examination by Mr. Ransom:

I was asked by the Special Master for a separation of the mileage and the present value of the transfer mains included in my appraisal, Plaintiff's Exhibit No. 268, and I have prepared such a separation and have shown the present value of those mains separately, in a sheet which I have prepared in the same manner as Plaintiff's Exhibit No. 268, and which is headed "Reproduction Cost of the Labor and Material Necessary for the Laying of the Transfer Mains of the Consolidated Gas Company of New York, as of June 1, 1923." In preparing this, I have taken the total mileage of transfer mains owned and used by the Consolidated Gas Company of New York in the Boroughs of Manhattan and The Bronx, and shown them here, and I have placed against those mileages for each size the same unit costs which were used by me in Plaintiff's Exhibit No. 268. Then I added to those the reproduction cost of the Harlem River main and the reproduction cost of the pavement paid for by the company over mains in the minimum actual sum, and then I have added employees' and public [fol. 2042] liability insurance on labor, pavement inspection in Manhattan only, and city inspection in the Boroughs of Manhattan and The Bronx. These figures are exclusive of the necessary charges for engineering and superintendence, interest during construction on mains, contractors'

profits and other undistributed structural costs. This is made up generally in the same way as my previous exhibit, Plaintiff's Exhibit No. 268, that is, I have shown the quantity in feet, the cost of labor performed and the material per foot, and the total, and then the reproduction cost as of June 1, 1923.

(Inventory and appraisal of transfer mains in Manhattan and The Bronx received in evidence, and marked Plaintiff's Exhibit No. 854.)

By Mr. Ransom:

I have made an examination of the direct labor and material cost as shown by the books and records of the company in evidence of all the Consolidated mains laid in the Borough of Manhattan during the year 1923, and have ascertained the total bare labor and material cost, exclusive of paving, for those mains as shown by the books and records of the company. The total figure I found was $54,022.80. I have taken the total number of feet of each size of mains laid during the year 1923 for the Consolidated Gas Company in the Borough of Manhattan, and, multiplying this footage by the unit price per foot of each [fol. 2043] such size shown in my appraisal, Plaintiff's Exhibit No. 268, excluding the item of paving over mains, the total figure is $42,788.84. The percentage by which the books of the company show a higher bare labor and material cost for the mains laid actually during the year 1923 than the figure obtained by using my appraisal units as shown in Plaintiff's Exhibit No. 268, is 26¼ per cent. So far as the bare labor and material costs, those costs alone are higher than the figures used in my appraisal units in Plaintiff's Exhibit No. 268. The number of feet of Consolidated main laid in Manhattan in 1923 is 8,602 feet 4 inches.

In the same manner as I have testified to about the Consolidated Gas Company, I have ascertained the same figures for all of the mains laid in the Borough of Manhattan for the three companies, in the year 1923, and the total cost figure there obtained, as shown by the books and records in evidence, is $73,332.69. I have taken the total number of feet of each size of main actually laid during the year 1923 in the Borough of Manhattan for the Consolidated Gas Company, the Standard Gas Light Company and the

New Amsterdam Company, and have multiplied the number of feet of each size by the appropriate bare labor and material costs for each size, exclusive of pavement, as shown in my appraisal, Plaintiff's Exhibit No. 268, and I obtain the figure of $48,846.40. The actual bare labor and material cost, exclusive of pavement, of mains actually [fol. 2044] laid in the Borough of Manhattan, in the year 1923, is 50.13% higher than the figure obtained by multiplying the lengths of the various sizes of mains laid for the Consolidated Gas Company, the Standard Gas Light Company and the New Amsterdam Gas Company by the bare labor and material unit costs in my appraisal, Plaintiff's Exhibit No. 268, exclusive of pavement. The quantity of mains laid in Manhattan for the three companies, in 1923, is 9,451 feet 11 inches.

There are two principal reasons why the actual cost of the mains actually laid were, in respect to the labor and material costs, so much higher than the costs which I used as of June 1, 1923, in my Exhibit No. 268 and in my Exhibit placed in evidence this morning. There were a number of connections made between mains of a substantial size during the year 1923. Those were made in congested sections of the city where construction was very difficult, and then some of those mains that were laid were laid in short lengths or piecemeal construction, in very congested sections of the city, and, therefore, while I considered these figures in making up my appraisal, I took a somewhat lower cost, as I thought it was more truly representative of the true average in Manhattan. My figures represent what I consider would be the average costs as of June 1, 1923, in spite of the fact that the actual average cost of all the mains laid in 1923 would be substantially higher, for the reasons I have given.

[fol. 2045] I have prepared an inventory and appraisal of the transfer mains of the New Amsterdam Company which includes the East River Gas Company of Long Island City, and the transfer mains of the Standard Gas Light Company of the City of New York and of the Northern Union Gas Company, on the same basis and in the same manner as I prepared my Exhibit No. 268 and Exhibit No. 854, which was put in evidence to-day. All of the mains contained in this inventory and appraisal are under my

direct or advisory supervision, and I am thoroughly familiar with the location and character of these mains. The figures in the appraisal are exclusive of the various undistributed costs which I have indicated as having been excluded from my figures in Plaintiff's Exhibit Nos. 268 and 854. This appraisal was made up in the same manner as I made up Plaintiff's Exhibit Nos. 268 and 854, and I took in all cases the same unit prices for the various classes of material and the various kinds of labor employed. On this appraisal I have shown separately those mains belonging to the New Amsterdam Company, the Standard Gas Light Company of the City of New York and the Northern Union Gas Company, which are included in the so-called Woods Joint Facilities Report. I have included in the paving over mains only such pavement over mains as was actually paid for by the company.

(Inventory and appraisal received in evidence, and marked Plaintiff's Exhibit No. 855.)

[fol. 2046] ALTEN S. MILLER, a witness called in behalf of the plaintiff, being duly sworn, testified as follows:

Direct examination by Mr. Ransom:

I am an engineer and contractor and am connected with the Bartlett-Hayward Company as Vice-President and a director. I have been connected with that company or its predecessor nine years, approximately. It is an engineering and contracting company having machine shops, blacksmith shop, plate shops and foundry. Among other things, it builds the principal items of equipment in gas plants and builds entire gas plants, installing such equipment as it does not build itself. I am a mechanical and consulting engineer. I was graduated from Stevens Institute of Technology in 1888, and have devoted my entire professional life of 35 years to the gas business. I have designed, manufactured and installed gas making machinery and have built new plants, and made extensions and alterations to existing plants. I have managed and operated gas plants. I am a member of the American Institute of Consulting Engineers, a Fellow of the American Institute of Electrical

Engineers, a member of the American Society of Mechanical Engineers, the Illuminating Engineering Society, Society of Gas Lighting of New York and American Gas Association and the Natural Gas Association. At one time I was president of the American Gas Light Association.

After graduation in 1888, from Stevens Institute of Technology as a Mechanical Engineer, I entered the employ of the United Gas Improvement Company of Philadel- [fol. 2047] phia, a company doing a contract business in the erection of gas plants and in operating plants. Later in the year, I became Assistant Superintendent of the Omaha Gas Company of Omaha, Nebraska, where I was engaged in erecting a gas holder, making alterations in plant, laying many miles of mains, and had entire charge of the manufacture and distribution of gas. In 1892, I became General Manager of the National Gas Light and Fuel Company of Chicago, contractors for gas works apparatus, at which time I had charge of making contracts for additions to and alterations of gas plants. In 1894 I came to New York City as Engineer of The East River Gas Company of Long Island City, which is now one of the gas companies affiliated with the Consolidated Gas Company. In that capacity I was engaged in completing the construction of the plant so as to manufacture six million cubic feet of gas per day, and later had charge of constructing increases in the capacity of the plant of that company and the New Amsterdam Gas Company to thirty million cubic feet per day. The company was constructing a tunnel under the East River, with a view to conveying gas for distribution in New York City, and I had charge, as engineer, of all the construction work and all the engineering operations of the company.

During this period, I laid a very large number of mains in Long Island City and in the City of New York, and installed meters and services to serve a great many con- [fol. 2048] sumers. The plant completed under my supervision was the second largest plant in the United States. I had charge of all the commercial operations of the East River and New Amsterdam Companies in Long Island City, and also of the construction and of the manufacture and distribution of gas in Long Island City and in New York City. In 1900, I was appointed Construction Engineer of the Consolidated Gas Company of New York. As such I

did a great deal of construction work and made the preliminary lay out of the Astoria Plant in Astoria, New York City, which plant is the largest in the United States. About this time I was appointed Consulting Engineer of the Brooklyn Union Gas Company, relative to the extension of its plant. In 1900, I also became Consulting Engineer of the Lincoln Gas and Electric Company of Lincoln, Nebraska. In 1902, I went to Baltimore as Vice-President and General Manager of the Consolidated Gas Company of Baltimore and built a new plant there with a capacity of ten million cubic feet per day. Later, upon the consolidation of the gas and electric light properties of Baltimore, I became Vice-President and General Manager of the Consolidated Gas and Electric Light Company of Baltimore. In 1909, I went to St. Louis, Mo., as Vice-President and General Manager of the Union Electric Light and Power Co., which furnished substantially all current for electric lighting and power in St. Louis. I made a complete valuation of the St. Louis plant and had charge of the distribution work of the company and rebuilt the power station to increase its capacity and efficiency. In 1911, I became asso- [fol. 2049] ciated with Dr. Alexander C. Humphreys, the distinguished president of Stevens Institute of Technology, and formed a corporation under the title of Humphreys & Miller, Inc., and conducted a business of consulting engineers in the operation, construction, maintenance and management of gas and electric properties and power plants. During this time I appraised the gas plants and distributing systems of the following companies: Washington Gas Light Company, Washington, D. C.; York Gas Light Company of York, Pa.; Paterson & Passaic Gas Company, N. J.; Newton Gas Company, N. Y.; 44th Street Plant of the Consolidated Gas Company of New York; Haverhill Gas Company of Haverhill, Mass.

I also made a study of the gas situation in Hungary, for English and Hungarian capitalists, in connection with the Hungarian Government. In 1915, I acquired an interest in the Bartlett-Hayward Company of Baltimore, a corporation of eighty years' standing as manufacturers of both coal and water gas making apparatus. During the World War, Bartlett-Hayward Company made a large amount of ammunition for the Russian, British and United States

Governments, involving in the neighborhood of one hundred millions of dollars. In connection with that work I supervised, between 1915 and 1918, the construction and equipment of manufacturing plants in Baltimore involving an outlay of over ten million dollars. In April, 1918, I accepted a commission as Lieutenant-Colonel in the Ordnance Department of the United States Army in charge of the De- [fol. 2050] partment for the Design of Cannon Ammunition and was engaged in that work until the middle of December, 1918. I then resumed my relations with the Bartlett-Hayward Company, and am now a director and Vice-President of that company.

During 1919, 1920 and 1921, assisted by a competent staff, I made an inventory and appraisal of the properties of the Brooklyn Union Gas Company and its subsidiary gas companies, and of the companies affiliated with the Consolidated Gas Company, and testified concerning them in the various cases in which they were introduced. I also inventoried, or inventoried and appraised, the properties of the Consolidated Gas Company and other gas companies, including the New York and Richmond Gas Company and the Queens Borough Gas and Electric Company, in the City of New York, and have inventoried and appraised the properties of the Consolidated Gas and Electric Company of Baltimore and the Grand Rapids Gas Light Company.

During my vice-presidency of the Bartlett-Hayward Company that company has from time to time done construction work at the plant of the Consolidated Gas Company, the plant of the Astoria Light, Heat & Power Company, the plant of the New Amsterdam Gas Company and other companies on the so-called Transfer System of the Consolidated Gas Company. I have been in touch personally with the work done by my company at the various plants and in charge of portions of it from time to time. In con- [fol. 2051] nection with my work, and for a number of years past I have bought and sold materials and employed labor used in the construction and operation of manufacturing and distributing gas plants. I have been keeping and do keep myself informed as to the market prices of such materials and the rates of pay of labor and have been and am now familiar with the market prices of such materials and with the rates of pay of labor as of June 1st,

1923, and since that time, in New York City and vicinity as well as outside of New York City.

I have prepared at the request of the Consolidated Gas Company an inventory and appraisal of all of its property used in its gas business other than land, buildings, tunnels and mains and services, which work I began in the latter part of May, 1923, or early in June, 1923. About eleven and a half months was taken up in the preparation of that work. It has gone forward continuously so far as the property of the Consolidated Company and of the indicated affiliated companies is concerned. I have personally devoted very much of my own time to that work. I personally examined all of the properties of the company which were visible. I had a number of engineers and stenographers immediately under me here in New York; I had the cooperation of the company organizations to which I went from time to time to secure all the information possible regarding the property; I had my own estimating depart-
[fol. 2052] ment and engineers in Baltimore. Mr. J. L. Vaiden was the engineer immediately in charge under me, and he was an engineer of my own selection. The other engineers of my staff were men whom I personally selected and employed. These assistants over this period of time worked with me and for me on the inventory and appraisal. They worked under my immediate supervision and personal direction, and I gave them instructions as to what they were to do, and how they were to do it. With respect to personally verifying their work from time to time, taking the original inventory, I went to the plants and stations and checked up the items in the inventory to assure myself that they were there.

With respect to some of the plants and properties on the Consolidated Transfer System, I had made inventories and appraisals of them prior to June, 1923. With respect to the Consolidated Company itself, and its plants and properties, there was first prepared under my supervision an inventory or listing of all the properties, and I personally checked that in the field, and verified it with my personal knowledge. When I had prepared my inventory which set forth the items and quantities of each kind, taking the inventory, I priced that; that is, I gave the prices to be applied to the individual unit quantities or to the individual

units, to my staff, and these prices where it was a computation were applied to the units, the computations being made on machines, and the figures were put into the appraisal, into final form, and added up. From time to time [fol. 2053] I checked the computations and additions to assure myself of their accuracy in such spots as I could check.

I prepared the inventory as of June 1st, 1923, and applied the costs of labor and the prices of materials as of June 1st, 1923.

I prepared this document entitled Inventory and Appraisal of the Property of the Consolidated Gas Company of New York used in its Gas Business, as of June 1st, 1923. I have shown an index page marked "One," which contains references to the pages where the different items of property are shown. On the page headed "Value of the Property of the Consolidated Gas Company of New York Used in its Gas Business, as of June 1st, 1923," that is a summary of the property appraised by others, as shown on the page, and the property appraised by myself, brought together as a whole, with the application of the undistributed structural costs, to which has been added the working capital and the franchise, giving the entire value of the total property. I have included the franchise at $7,781,000, which is in pursuance of the decision of Court to which I make reference. I have not made in this figure any allowances for going value. Aside from this figure of $7,781,000 I have not made any allowance for franchises, easements or any other property not specifically mentioned. The figures that are included in parentheses after my classifications of property, some of them figures and some of them a combination of figures and letters are the numbers of the accounts in the Uniform System of Accounts of the Public Service Commission, which were in use as of [fol. 2054] June 1st, 1923. I have used the account classifications as they stood at that time, rather than those which are now in force, and these figures are included in those accounts as nearly as possible.

Wherever I have carried into this inventory and appraisal any valuation made by anyone else, I have so indicated here. For example, I took land from Mr. Huntley's figures, buildings from Mr. Burt's figures, the street mains and services from Mr. Simpson's; and certain accounts

from the books. That is, where I have taken the accounts from the books with respect to items of property that are too small to inventory and appraise, I have shown that I have taken the books and the book cost. For example, laboratory and equipment, $23,000, I have taken that as shown on the books of the company, likewise tools and implements, certain general equipment, scows and the like.

On the succeeding pages I have shown notes regarding certain necessary elements of cost in reproducing the property of the company as of June 1st, 1923, at pages 3 to 8 inclusive. I have first shown the items which I took into account and the factors which I took into account in respect of working capital, together with a reference to the accounts in the Uniform System of Accounts which make up working capital as there set forth. Beginning on page 4 I have set out the details of the elements which I take into account with respect to the undistributed structural costs shown on page 2 of this proposed exhibit, and these notes are along the same general lines and to the same general [fol. 2055] effect as I have set forth in my testimony in these cases in this court, and as to those items likewise where there are appropriate references to accounts in the Uniform System of Accounts I have indicated those.

The figure which I have shown in respect of working capital represents in my judgment the sum necessary and reasonably required as of June 1st, 1923. That is a figure as of that time in 1923 and is not submitted as a figure for 1924.

Then after these notes with respect to the items of undistributed structural costs, I have shown on page 9 a general summary of costs, first of the manufacturing stations and then of the holder stations at miscellaneous stations. Then on page 10 I have shown an index of the different items of property at the 11th Street station, for example, with the page references to the pages on which the details of each of those items of property are set out. Page 12 and the succeeding sheets set out the details of the items of property which have been summarized in the sheets preceding. For example, Sheet 12 relates to coal handling apparatus. The figure and the letters given in the extreme left hand column of the page is a reference to the underlying data, put in for my own convenience. The field notes

and the computation, where there is such, from which the price is made up is shown. In the next column headed "Material," that is a brief description of the individual [fol. 2056] piece of apparatus. In the column headed "Quantity," that is the number of those pieces of apparatus. With respect to apparatus of this kind, sometimes I have shown the unit price and other times I have not. Generally I have shown the unit price where there is more than one unit. I have not always done it, but generally where there is more than one unit I show the unit price. On this page 12, for example, with respect to each of these units of apparatus there is only one of each kind, and therefore my column for unit and unit price is blank. I have shown simply the total cost in the extreme right hand column, that each of these pages would total. On page 17 where I have numerous items of property of the same kind in the generator house A-1, I have there shown the unit price, and I have shown the quantity in the quantity column.

Going right through these detail pages, the inventory and appraisal has been made up in the way in which I have testified, and these are the correct details of the figures given in the summary sheets to which we have already referred.

The unit prices shown in the column entitled Unit Price represent in my judgment the fair, reasonable and necessary cost as of June 1st, 1923, of the materials and labor entering into each of the items of property shown in this inventory and appraisal. That is on a subcontract basis, and the same answer with respect to the fair, reasonable and necessary character to the price shown applies also in instances where I have not shown a unit price in the unit price column, for the reason I have already indicated, but [fol. 2057] have shown only a figure in the total cost column.

With respect to this entire proposed exhibit, both as to the summary sheets, the schedules of details and the notes, they do, in my opinion set forth the reproduction cost and value of the property of the plaintiff company as of June 1st, 1923, so far as used in the gas business, made up in the manner to which I have testified, and if I were asked appropriate questions with respect to each of these items of

property and these elements of cost, my testimony would be as set forth in this document.

During my examination of the property shown in this inventory and appraisal, I found with respect to its maintenance, operating condition and suitability for the use to which it was being devoted, that it was well maintained, operating efficiently and well suited for the work which was being done. It appeared that repairs, renewals and replacements had been made as and when needed. When I make that statement, I am referring to all of them listed in this book. That is, these are the Consolidated Gas properties which I personally examined and checked. I would be willing to include the buildings, but not the mains and services, which I have only examined incidentally. I have not made an elaborate examination of the mains and services. I have watched them from time to time, and where excavations are going on and I happen to pass them, I always made it a point to stop and look at them; but I have not made an extended examination, and I have so far [fol. 2058] as mains and services are concerned, made an examination to that extent over some thirty years. So far as my observation and experience has gone, what I have just stated is applicable to the mains and services. The testimony which I have just given with respect to maintenance and condition is applicable to the buildings, although the costs of the buildings have been testified to here by Mr. Burt, and it is true of all the items of property concerning which I have made the inventory and appraisal. That refers to the buildings such as the General Office Building on 15th Street and the building on 57th Street, of which I have made an examination. I have an office in the 15th Street building and have been around it quite extensively. The 57th Street building I have been over quite carefully.

I have been engaged in making, similarly, an inventory and appraisal of the plant and property of the Astoria Light, Heat & Power Company and the other companies on the transfer system, and so far as the inventory and appraisal of the property of the Astoria Light, Heat & Power Company are concerned, I have completed the inventory and appraisal as made in the field, but the appraisal is not quite complete. That is, I have not quite completed my

pricing or valuation of the inventoried property. The situation is similar with respect to certain other properties of companies on the transfer system which are included in the so-called Woods Report.

All of this work of making this inventory and appraisal has gone on under my immediate personal supervision and I devoted considerable time to it. That work so far as my [fol. 2059] own participation in it is concerned has been interrupted at times by similar work for other companies in New York City, and by testimony in those cases. I have been giving a large portion of my time for the past eleven months or thereabouts to the work of ascertaining the reproduction cost of gas property in New York City. The work of my own men under my direction has been going on continuously since last June with respect to the property of the Consolidated Company. So far as I have incorporated in my summary sheets appraisals made by another person, I have taken those from the figures in the exhibits in this case, except for the items stated to be taken from the books.

(Inventory and appraisal of the property of the Consolidated Gas Company used in its gas business as of June 1, 1923, received in evidence and marked Plaintiff's Exhibit No. 856.)

[fol. 2060] Colin C. Simpson, a witness in behalf of the plaintiff, resumed the stand.

Cross-examination by Mr. Donnelly:

I do not think there was anything over about 600 feet of eight-inch main laid in May, 1923 (examining papers), 660 feet. It was laid in 173rd Street, Haven Avenue and is identified as New Main No. 1701. That is in the Washington Heights section. The conditions under which that stretch of main was laid were normal conditions of main laying for that section. The cost here is about right for the average. There is a little more rock there than you would have in average rock and a little less sub-surface structures. I have not got the cost per foot of the labor and material for laying that stretch of main, but we can work it out. We can work out the cost exclusive of pave-

ment as shown by the books. The bare cost is $3,180. I can not split that between labor and material. I have the data here from which I could make that split. 8,602 feet and 4 inches of main were laid by the Consolidated during the year 1923. No repair jobs were included in that at all, or the putting on of new fittings or specials, except where a valve is placed the valve is capitalized as a portion of the main. I mean by main laying job, putting a main in the ground sometimes in place of another, and sometimes not.

As to where I got my figures of quantities which are shown on Plaintiff's Exhibit No. 855, in so far as they relate to the Standard, Northern Union and New Amsterdam [fol. 2961] Companies that is an actual measurement of those mains. I laid a great many of them and I maintained the others. I did not have to get any of those quantity figures from the books and records of those respective companies because I have their records, since I keep their main records for them. I did refer to the main records in getting some of those quantity figures, but I also checked it by the mileage we have of those mains. As I say, I laid a great many of these mains myself, and I know where they are. They do not in part depend upon main records of those respective companies, and yet they may coincide absolutely with the main records of those companies. I know that these figures which I have set forth on Plaintiff's Exhibit No. 855 were correct in so far as they relate to quantities of these companies, because, as I say, I have laid most of the mains and I know how long they are; the other mains I have measured. With reference to those which I did not actually lay, I got my information from the actual location of the main on the ground. The one main in that connection and the only one you are talking about now is the 60-inch steel main, and we have uncovered that at times and have actually measured that up. In so far as the quantities of those respective mains are concerned, we went out and uncovered the actual number of feet here shown of mains. At the time the mains were laid it was done then, if I laid those mains. I think all the mains laid by the Consolidated Gas Company were shown on Plaintiff's Exhibit No. 855. There are a great many mains make up a certain mileage and I do not place every one, but my present recol-

[fol. 2062] lection is that they were all so laid. The Master, as I recollect it, requested me to split my appraisal so that he could tell what part of that value and what part of that mileage was transfer mains. I do not know exactly what he wanted, but I gave him what I thought he wanted. I do not know what purpose is in preparing the exhibit marked Plaintiff's Exhibit No. 855, in which I purport to show mains and tunnels included in the Woods Report and mains and tunnels not included in the Woods Report.

On Plaintiff's Exhibit No. 268, I have given the total cost per foot for 36-inch mains in Manhattan at $34.031 per foot. In Plaintiff's Exhibit No. 855 I have 12,368 feet of 36-inch cast iron main owned by the Standard Company costing $464,285, or the equivalent of $37.64 per foot. There is no difference. Plaintiff's Exhibit No. 855 shows the total value of the 36-inch mains, which contains the pavement paid for by the company, the insurance and other items, which are shown below the detail figure on Plaintiff's Exhibit No. 268. On the same exhibit, that is Plaintiff's Exhibit No. 855, as to 30-inch mains I have given 2,837 feet costing $77,042, or the equivalent of $27.06 per foot. On Plaintiff's Exhibit 268, my total cost per foot for 30-inch mains in the Bronx is $23.864 per foot. The difference between the $23.864 and the equivalent of the figure on Plaintiff's Exhibit No. 268 of $27.06 per foot is explainable in two ways. In the first place, I took the Bronx figure [fol. 2063] instead of the Manhattan figure, and in the second place as applying to the 30-inch mains, the pavement paid for with the insurance premiums, city inspection, those are not included in the labor and material figure which was given before, so must be added in to make the figure given in Exhibit No. 855. As to the following question: If it costs at the rate of $27.06 per foot for the Standard Gas Light Company 36 inch main, why didn't I figure the cost of the 30-inch mains of the Northern Union at $22.95 per foot on Exhibit No. 258 for 30-inch mains in the Bronx and figured a cost of $23.864 per foot, that is a double-barreled question, but I will try to trace that thing through. In the first place, the one 30-inch main figure was in Manhattan for the Standard Gas Light Company. Plaintiff's Exhibit No. 268 is for the Consolidated Gas Company's mains. It has mains of that size in Manhattan and

the Bronx but there are just a few in the Bronx and those are priced on the peculiar conditions where they were laid. I laid them and know what those conditions are. I also laid this Northern Union main in the Bronx and I know what that main cost when it was laid under the peculiar conditions in which it was laid and I have priced that main, right on its own feet. On Exhibit No. 855 I have a total of $26,064 for the 30-inch main in the Bronx. For the 30-inch mains of the Northern Union I have $22.95. I have 2,787 feet at $63,964, which, as I explained before, is the total value of that main as of June 1, 1923, I having laid that [fol. 2064] main and knowing the conditions under which it was laid. The difference between $22.95 and $22.684 is due to the peculiar conditions of this short stretch of main. There is a great deal of rock on the Consolidated 30-inch mains in the Bronx, but this happened to be laid from Morris Avenue down to Webster Avenue and it so happened that we were able to avoid rock there. On the New Amsterdam Gas Company 24-inch mains, on Exhibit No. 855 the cost is given at $20.28 per foot, whereas on Exhibit No. 268 it is given at $19.324 per foot and the answer is the same; in Exhibit No. 855, you have the full value given including the cost of pavement paid for by the company, insurance, city inspection, while the figure you have given from Exhibit No. 268 is merely the bare labor and material cost figure without the inclusion of those items. The New Amsterdam main on the new Exhibit No. 855 figures at $20.28 per foot and the Standard on the next line below figures at $20.17 per foot—because of another element which is the different quantity of rock encountered in laying those two mains. On the 20-inch main of the New Amsterdam Company on Exhibit No. 855, the cost per foot is given at $14.84, whereas on Exhibit No. 268 it is $14.32 and the same answer as I gave before accounts for the difference there. The non-inclusion in the figure I quoted from Exhibit No. 268 of those items shown beyond the subtotal of reproduction cost of pavement paid for by the company, insurance, pavement, inspection, permits and city [fol. 2065] inspection. As to the units per foot for labor and material on the 72-inch mains, I haven't it figured out on the per foot basis, but the footage is there on the 72-inch and the total material on the 72-inch is $947,849.48 and the

total labor is $150,890.19. Now, that merely has to be divided by the total footage there of 10,313 feet. The same details do not apply for the 60 and 72-inch; as to the 72-inch I have given the figures, but I cannot get details in the same way for that job, because that was a proposition of placing mains in a tunnel. There was no excavation or back-fill or anything like that that I have. On the other hand, the pipe is enormously heavy. The pipe weighs 13-1 5 tons to the length. It would not match up with street main laying at all. Suppose I give you the whole proposition here, with the pipe and specials. I will give you the total figure on that. The pipe is $19,435,515 pounds. It is $70.60 per ton, which is $686,073.68. Specials is $2,001,-704 pounds at $162.60 per ton or $162,738.54. Lead wool is 202,824½ pounds at .0895 per pound, which is $18,152.79. The yarn is 12,705.5 pounds, at 6 cents. Now, there was material used in there, including storing, cleaning, cutting and laying the pipe and incidental material. It is a very difficult matter to compare this with street mains. In testing the joints and purging the pipes we used $9,442.64 for the miscellaneous material and the rails for the runway and planks for the walk—that is the runway on top of the joints that is used in going through the tunnel to inspect the rails. That is at $10,237.10. The drip pot and the drip [fol. 2066] pumps, that is pumps for pumping the drips is quite a different proposition in a tunnel than for the drip pumps for a street main, and that is $2,620. Then there is the ventilating system in the tunnel to use in case of gas leakage, which is $10,409.23 and the tunnel electric lighting, which is $9,720.70. This is material only I am giving you. Then the plant equipment, general opertions, the labor dismantling the plant, miscellaneous expense and field supervision, all of those items amounted to $37,692.47 so far as material is concerned. Now, on the labor, caulking the joints, that cost $8,635.37. I have been using in every case here, the amounts as of June 1, 1923. Unloading, storing, cleaning, loading, testing and purging the pipe, labor $35,205.50. Labor of placing the rails on the runway and planks for the walk, $12,436.10. Placing the drip pot and connections, $898.18. Labor of installing the ventilating pipe, $2,120.14. Labor of installing the electric lighting system $15,411.60, and the same item for plant equip-

ment, general operations, labor of dismantling plant, miscellaneous expense and field supervision, $76,183.30. That is the total, except that of course, there are 48-inch connections above ground connecting this tunnel, and the labor and material on those is $16,495.27 and the liability insurance on the labor in the tunnel, at 4.18 is $6,906.07. The tunnel mains were put in in 1915 and 1916. I have not laid any mains under similar circumstances since that time, and, [fol. 2067] as I have stated, my figures are as of June 1, 1923. I laid the mains in the tunnel, and have a record of what it cost at that time and I estimated what it would cost to do that job today with the changed labor and material conditions. I had cost data from the original laying of them to give me an estimate of what it would cost to lay those mains as of June 1, 1923. The only elements that will change are the prices of material and the cost of labor. In giving the reproduction values, I think the original cost of doing the job would be of assistance, unless there were some special difficulties in connection with it, and there were no insurmountable problems in laying the 72-inch mains, although there were some problems in constructing the tunnel.

Speaking of the mains that were laid in the Astoria tunnel, I included in the material in the laying of the mains, the following: Pipe and specials, lead yarn, a great deal of miscellaneous material above ground that was necessary in placing the pipe and caulking. We had to make up some special—you might call them testing plugs that were put inside the main for the purpose of testing, that were rather elaborate. The mains were so close to the edge of the tunnel that it was necessary to design and construct what we called caulking machines for the purpose of caulking that portion of the joint. It was merely the proposition of allowing the men room enough to caulk the joints. There was also a lot of miscellaneous material on the ground in [fol. 2068] the way of lumber and blocking and so forth, which was needed in landing this very heavy material and putting it in place. The material I have just enumerated was the same material that was used when the mains were originally laid. I did not mention the use of any concrete blocks because the concrete blocks were there and were put in, but they were covered by Mr. Davies in his appraisal of

the tunnel, because his organization built those, and put them down themselves to lay the mains on. Concrete blocks were used in the laying of the mains in the tunnel, and I have not included those in the material costs. The pipes were lowered at the Astoria end and then run into the Bronx. You have to enter the spigot in the hub. You can not take pipe of that size and throw it around in the tunnel, so you had to run the pipes facing Astoria and the next length was run facing that. All of the material was stored at Astoria except such material as was used in the Bronx shaft, and the material that was stored in Astoria was drawn up on the Astoria side. That is practically all the material that went into the laying of the mains in the tunnel, except the pipe for the Bronx shaft, which was lowered on the Bronx side. The work of lowering those mains was done by Jacobs & Davies' organization, at my direction. I supervised the doing of that and I had charge of the laying of the mains. When they came to that portion of the work the direction of that was done by the man in charge of the mains and I was held responsible for it.

[fol. 2069] In giving my figures as of June 1, 1923, for the laying of these mains, I got my prices of labor and material from people who make the material. We do not make it ourselves. For instance, I knew the price of cast iron pipe, as of June 1, 1923, in the same way as I testified to in connection with Plaintiff's Exhibit No. 268. The letter I showed you covered this price of pipe. The labor of that kind, the caulking was done by my own men. I know what caulkers are now and the other kinds of labor were then. I had the labor rates then and I know what the labor rates are now. 72-inch cast iron pipe, two and three-quarter-inches thick, a little over 13 tons per 12-foot length was put into the mains. I used lead wool and yarn joints. I am speaking now of the time when the mains were laid, and the same kind of joints would be made as of June 1, 1923. The joints used in laying the mains are known as hub and spigot joints, and they are the same as would be used now. The caulking was done by compressed air tools. It was necessary to use caulking machines in such a process as the pipe was close to the edge of the tunnel and there was not room for the men to work and they would use Miller packing, a yarn treated with soap and some lead wool. 202,824.5

pounds of lead wool at .0895 per pound, and I gave you the multiplication of it. I have not got it here per joint. It is roughly 220 pounds of lead per joint. Of course, there is a certain amount of waste there, between 2 and 3 per cent,—but I have given the gross amount used. I can not [fol. 2070] tell you what the average progress of joints caulked per day was. As to how many I figured as of June 1st, 1923, I did not figure it in that way. This is a very special job and it is done under extreme conditions of lack of light and all that. I know the total labor for caulking joints would be, as of June 1, 1923, $8,600 and odd dollars. I can work that back to the cents per joint. I do not think the average progress was more than 16 joints caulked each day with 16 hammers. I do not know just what you have in front of you there, but I will say that we were not laying any 16 lengths per day. That was very big and heavy pipe and pretty hard to get in. So, in making up my estimate as of June 1, 1923, I am not able to say what was the fair progress per day. I knew what the total labor cost then was and the total labor used then would not be different today. That, multiplied by the caulker's rate gives me the rate. The amount of effort would be the same. What you can buy that effort for is different as between those dates. The price of the labor would be different, but the amount of the labor would be the same. The method of caulking the joints would not be any different as of June 1, 1923, as compared with the time when the mains were originally laid. I still think the caulking machines that were used to caulk those joints would be used. They are stored up at the 111th Street station now. After the joints were caulked we had to have an inside plug which spanned the joint and compressed air was introduced between the diaphragm of [fol. 2071] this plug—the joint was soaped on the outside to see whether it was leaking or not. If they showed any leakage, they were immediately made over again. The method used in laying the mains when they were originally laid is as follows: There was a traveler run by compressed air, a traveling crane, practically, that ran over rails on brackets on the side of the tunnel just below the spring of the arch, and this traveler would pick up the pipe from a cradle on which it was landed at the Astoria shaft and carried it on cranes to the last pipe, entering the spigot into

the bell of that pipe. It sounds very simple, but it was not so. It took much longer to do it than it takes to describe it. The pipe was only laid on one shift of an eight-hour day, but the method of laying these pipes would not be any different now as contrasted with the method pursued at the time they were originally laid. There has been no improvement in the art in laying mains and tunnels between the time originally laid and now, and it could not be done in any less time now as contrasted with the time that they were originally laid. There has been no change in the method of laying the mains in tunnels. We have not laid mains in tunnels since then, but if I were confronted with that same situation today, I would use exactly the same methods and the same amount of labor, and lay my mains in the same method, and caulk my joints in the same manner. I would use the same number of employes and I would even go fur- [fol. 2072] ther than that and try to have the same gang as then, because they were good men. I thought I answered that question as to the laying of the mains, but the same thing is absolutely true. This is not a job that you can compare with any other job in so far as the progress or anything like that is concerned, unless you had another tunnel of the same sort and the same type and containing two lines of pipe of the same weight and length. What I was interested in was how much effort it took to lay and caulk that pipe, and knowing that I would know what that effort cost as of June 1, 1923. I do not recall what was the average rate of progress in laying that pipe per day. It would not refresh my recollection now if you told me it was not more than twelve lengths a day. It might be perfectly all right, and it might be 11 or 10 or 9. I know of days where we did not get a length placed. There might have been a little burr or something on the outside of the pipe,—you could not get the pipe lined up properly. It was enormously heavy stuff and if you found it was not lined up and you had to withdraw one or two lengths, it would waste a whole day. The mains were laid in pairs, the work on either side being done all the time, simultaneously. I do not know the number of men handling each length. It may have been six or might have been a dozen or sixteen. In my reproduction estimate I have the man hours, but I have not got the individual number of men. That is, not used

in laying the length of each main. I can not give that without working it back. If I gave you the rate of pay today [fol. 2073] you can figure it in man-hours. Common labor is 60 cents an hour and caulkers $1.00. You would get your labor by taking the two. For instance, I gave you the labor of handling, storing, cleaning, loading, testing and purging pipe as $35,000 odd. 60 cents an hour is $4.80 a day. You take an average figure on there, because you have some who are higher than that, at $5.00, and divide $5.00 into $35,000 you would have 7,000 man days. How many man days it took, there were that average number of men, on a day of eight hours, and I would go through the same process with regard to the rates of pay and the division into the total for that rate of pay for each of the classes of labor if I were getting a figure. I think I have given all the details so you can do the arithmetic of it. There was no difficulty in laying these mains other than that occasioned by the extreme weight of the mains. The difficulty encountered because of the fact that the ends of the pipe would not quite meet is extraordinary. That difficulty was merely a proposition due to the way the foundry had cast the pipe. In some cases we found we had to cut off portions of the end of the pipe because there were blow-holes in that that had not shown up at inspection at the foundry. That character of difficulty would still exist if you were putting that pipe in today. You would have that same proposition and you would have to cut about the same number of lengths. With two and three-quarter inches of thickness, that is an enormous thickness of iron which is quite different from our [fol. 2074] ordinary pipe and some of those defects only showed up when the pipe was tested, and the foundry, on being called to task for it stated it was impossible to do otherwise, it was merely the chance in casting, that those things would happen. There was no difficulty encountered because of leakage in the joints. The leakage in the tunnels is water leakage. They had considerable difficulty, but that did not interfere with our work particularly. If you want an absolute statement on the thing, my men would once in a while get their backs wet, but that happens also in the street, and that did not interfere with the progress of laying the mains. Included in my reproduction estimate here of the cost of laying these mains in the tunnel, I have

given an item here for liability insurance of $6,506.07. You must not try to match that up with tunnel rates; that is taken at our regular street rate for liability on street mains and they won't match up in any way with what tunnel workers themselves have to pay. That was an expenditure that was incurred at the time these mains were laid for the reason that the Workmen's Compensation Law was then in effect and it has always been our practice to carry that insurance. As to the companies that laid these mains carrying their own liability insurance, they may have or may not have done that; but irrespective of that, it costs somebody something, and if it were done today it would cost somebody something, we are not going to be given that insurance, I assume we have to pay for it. I am only including insurance for work that was done for us, and whether [fol. 2075] it was carried by the company that did it or by ourselves and paid for, as I said before, somebody has to pay for it. Now, it is a proper part of the cost as such. On Exhibit 855, I have also given a combination of steel mains and cast iron mains; that is the 60-inch steel main from the Astoria plant and Ravenswood plant, and there is a portion of that main has a roundabout connection of 48 inch main through the meadows and also the end connection of the Astoria is a 48 inch to the Astoria tunnel. The total labor, the length of the main you have—the total labor $351,883.32, as of June 1, 1923; five per cent field supervision, $17,594.17; two per cent for maintenance of tools, $7,037.67; liability insurance on the labor would amount to $15,757.16, giving you a total complete labor cost of $392,272.32. The material, total bare material, $376,929.59; five per cent store room charge, $18,846.48, making a total material $395,776.07. To that has to be added the extra work we had on that in connection with the sewers, $61,795.80; city inspection $448.95, giving you the total figure as of June 1, 1923, of $850,293.14. I included in my labor chiefly common labor, but there are also some skilled men in connection with putting in the pipe, making up the joints, caulking it. Common labor as of June 1, 1923, $4.80 a day, 60 cents an hour. That labor is likewise on one shift of eight hours per day. There would not be any storage of the material for this job; the material would go right in on the job. The storeroom charge does not mean storing the

[fol. 2076] pipe. That storeroom charge covers the expense of all the small miscellaneous materials that I cannot keep separately. It would not pay me to keep separately, like kerosene and red lead, oil, muslin, red flags, barricades, rope and stuff of that sort. That is only part of the storeroom charge. Another part is the necessary cost of keeping track of my material. That has to be done on the job, and it may have to be done a long ways from the job, over in the mill. The storeroom charge amounts to five per cent of the total material—$18,846.48. The small material will be stored any place that you can rent around there. On that particular job they rented some lots, as I recall, when the main was laid, near Grand Avenue, and had some shanties on there and used those for storage. I made no particular assumption as to how long the material would have to be stored. I based that five per cent on our experience that it costs us five per cent of the material charge on large jobs for this incidental expense and for looking after the material, checking the receipt, making out vouchers, doing all the paper work necessary in connection with it. I am not able to approximately give how long it would be necessary to employ land space and building space for the storage of the material; it would depend entirely on how long you wanted to take for the job. I have not given an estimate of what length of time it would take to do these various jobs, but you could lay this 60-inch main in a year, or you [fol. 2077] could lay it in two years or three years. I made no assumption as to the length of time it took, and I am not willing to express any opinion as to the length of time it would take to do it without very well defined statement as to just what conditions it is to be laid under. It took the best part of a year to lay the mains in the Astoria tunnel.

I mentioned an item of sixty-one thousand and some odd dollars for the cost of some sewer work. This 60-inch main was so big that the city made us parallel the sewers in some of the streets, the sewers on the other side of the street, because the house lateral connections on one side could not pass the main and connect with the sewer when it laid on the other side of the street. That was done on Van Alst Avenue, I believe, about a half or three-quarters of a mile, and there was also some of that on Ridge Street, the exact length of which I cannot say offhand. I have the data

right in the office now. I didn't think to bring it with me for the purpose of cross examination. I have done it before on other mains, and I have not been asked the question. The bare labor for the 48-inch cast iron river main shown on Exhibit 855 was $87,683.21, the field supervision $4,384.16, maintenance of tools $1,753.66, liability insurance, $3,921.72, making a grand total for labor $97,742.75. The material on that job was $261,141.60; storeroom charge of five per cent, $13,057.08, and that gives a total of $274,[fol. 2078] 198.68. We were able to salvage material from that job which we credited, amounting to $34,112.55, making a net total of material of $240,086.13; total labor and material was $337,828.88; and I am almost ashamed to say that there was such an item as pavement inspection and permits on a main under the river that amounted to $3.26, making a grand total of $337,832.14. Where I say it amounted to, I am referring to in all cases what it would be as of June 1, 1923. There you would have divers, and you haven't the divers' rate, but as of June 1, 1923, and as of today a diver, tender, two pump men and the rent of the diver's equipment is $54, for the whole thing per shift of eight hours, and if your diver gets his feet wet, why, you have to pay that same price. I am using divers right now on the Harlem River, and I laid that main and know what it cost. We use them from time to time. We pay $54 to the employer of the diver. The diver may be his own employer or somebody else may be, but that is the regular rate for a diver, crew and equipment, $54 a day. I do not know how much the tenders get a day. There may be varying splits on that. I do not know how much the pump men get a day. They use a pump, a diver's hose and outfit, which is rather an expensive outfit, copper helmet. The $54 covers the rental and wear and tear on that. As to the total cost per foot for the 48-inch cast iron river main being $42.655 per foot, I think counsellor's arithmetic is at fault. If that [fol. 2079] didn't come to over $200 a foot, I would be very much surprised. It is 792 feet long, and it is $337,000; I wish I could lay that for $40 a foot, I would go in the business right away. My unit of $42.655 applies to the 60 and 48-inch main taken together, for which I have given a reproduction cost of $1,064,464. The 48-inch would be a reproduction figure of something less than $50. I will give

that to you if you want it. That figure for the 48-inch was 637 feet of it at $44.403 per foot. It is the same unit as I gave for the 48-inch New Amsterdam main which is the second item on the left hand column of Exhibit 855. That unit I first gave you should be the same as for the 371 feet of 48-inch that was in with the tunnel, because this also was in the Astoria property, though a different main. Now, the total labor and material on the 48-inch that is bracketed with the 60-inch steel main and is a part of that main is $48.317 per foot, and that is exclusive of the pavement and city inspection. Those items are very small, they only amount to $200, all told, both of them. That 48-inch main, the $52.999, is in Manhattan, where conditions of laying are totally different, and a great deal more difficult and more expensive. You have rock; and yet on this main, this particular 48, while we did not have so much rock as we have in Manhattan, we had some, and the main itself was laid on piles through a swamp, which made it a little bit difficult, but the expense was less than it would be in Manhattan. [fol. 2080] The total labor for the 36-inch Ravenswood tunnel shown on Plaintiff's Exhibit 855 for those two mains is $78,856.66, and the total material, $137,214.38, making a grand total of $216,071.04, and then from that has to be subtracted what we call the Welfare Island connection that was put in at the same time, but that is a distribution main and I have not carried it into this at all, bringing it down to the figure here of $195,145. The classes of labor are not any different there. They would be exactly the same as I gave for the Astoria tunnel. The Ravenswood tunnel I believe was built in 1893, '94 and '95, in that period. The figures of quantities that I gave with reference to the 36-inch Ravenswood tunnel main are partly based on my experience in laying mains in the Astoria tunnel, though not to any great extent on that, because that is a totally different proposition. These mains are more nearly the weights of mains used in the street, and I went down in the tunnel and examined the mains and figured out just how I would put them in, and worked it out on that basis. I have not worked out my unit per foot on that, but they could be worked out. Each of these is treated as a job. It would not be any particular value to me in getting it per foot unless I had two or three hundred tunnels to multiply it by. The tunnel pipe

on one line is 1,349,217.6 pounds at $.0338 per pound, and in the shafts there is 105,606 pounds at $.0738 per pound. That is a different price. The shaft pipe is a special propo- [fol. 2081] sition, flanged pipe. The Ravenswood Tunnel is about 2,750 feet long, and the lengths of the pipe would be the same as in the case of the Astoria Tunnel; this is just street pipe, that is all. To get the lengths of pipe laid in the Ravenswood Tunnel you divide the total lengths by 12 and you will get it; 6,035 divided by 12. There are two mains in the tunnel; they lay one over the other, but not in exactly the same position as in the case of the Astoria Tunnel, because in this case they are laid one over the other while in the Astoria Tunnel they are laid alongside of each other. The ends of the pipe in the bell would be deducted, but when we speak of 12-feet lengths we take care of that, because the pipe is made to lay 12 feet, but it is really 12 feet 4 or 4½ or 5 inches long. I assumed the weight of the pipe per length to be just what the pipe is there now. I haven't the weight. I do not happen to have my catalogue standards here, but it is merely the length of the tunnel pipe divided into this total weight which I have given you here, and 36 inch pipe runs about 400 pounds to the foot. I know what was actually put in at the time the mains were originally laid. I have been down in the tunnel and inspected it, drilled holes in the pipe and measured the thickness of it and know exactly what it is. The same weight as it would be in my reproduction figure—weights do not vary at all. The pipe had a certain weight at the time it was originally laid, and it has that weight today. My esti- [fol. 2082] mate of laying that pipe in the tunnel, having gone down there and looked it over carefully. I figured that it would take us just five times as long per foot of pipe, it would be five times as much effort of the pipe layers to lay a foot of pipe underground in that tunnel as it would be to lay it out in the open in the street, and I have therefore taken five times the cost of street laying for that. Street laying is, on that size as of June 1st, 1923, $1.19 per foot. I did not originally lay the mains in the Ravenswood Tunnel. They were not laid under my supervision. I do not know what rate of progress per day was made in laying the pipe at the time it was originally laid, and I have no information upon that subject. I did not assume the same

amount of labor would be used here as was used in laying the Astoria mains. There would be considerably less labor in laying the mains in the Ravenswood Tunnel, because the pipe is much lighter, much smaller, the tunnel is not so deep; that is all there is to it. The Astoria tunnel is about 4,800 feet or thereabouts long. That is approximately right.

In answer to plaintiff's counsel this morning I testified to a number of main-laying jobs done in 1923 by the Consolidated and I have those jobs here. There were 83 altogether for the Consolidated. I will refer first to those jobs between January 1, 1923, and June 1, 1923. I have them by sizes. Suppose we take the six-inch. At Clarkson Street between Greenwich and West, 537 feet 2 inches of main. I got my figures from the books, but I haven't [fol. 2083] split it up here, labor and material, I merely have this as information in getting the whole. It is all in the books, however. I did not expect to have to answer questions directed to how much per foot the cost was for labor and how much for material. If I had gotten it up in that form it would have meant just twice as much calculation. I have the total figures here, and what I am getting at is the total amount of money. I would not say that these various main laying jobs done by the Consolidated during 1923 do not represent average conditions under which these mains were laid, but in reproducing your whole system this is partly piecemeal construction and it is also partly construction done, in so far as the larger mains that were laid are concerned, in short stretches in very difficult points making connections, we will say, between a 30 and a 36, that are all in very congested locations. That situation would apply to the majority of the instances which I collated from the books in the case of the larger mains, and in the case of a number of smaller mains. There are some mains, and my attention was directed to those in court before, where the cost was below my appraisal figure, that is the cost of bare labor and material on the books. Taking these jobs here, a list of which I have before me, of mains laid in 1923, the bare labor and material costs represent a figure 50 per cent higher than my estimate when you take in the mains laid for all the companies which have those larger connections. [fol. 2084] When you take the Consolidated alone it is 26¼

per cent higher. I gave those two figures this morning. Taking the 83 jobs for the Consolidated, I would not say that the fair cost of material and labor employed in those 83 jobs would furnish a fair criterion of what it would cost under average conditions to lay the mains as of June 1, 1923, and I did not take them that way for the reason that there are a number of stretchers in there, a great number of pieces of smaller lengths, and to make a very fair reproduction figure I had to adopt a figure that was somewhat less than that figure on bulk construction under the most favorable conditions. These are 25 per cent higher than my figure. These figures actually are twenty-five per cent higher than taking the same footage of the same main at my reproduction figure estimate. That is eighty-three jobs including mains of diameters of four, six and eight are the bulk of them. There are connections of twenty, twenty-four and, I think, there is one thirty there, but they are all short pieces. The six-inch mains constitute the larger part of the jobs that were done in 1923.

Cross-examination by Mr. Chamberlain.

I have a statement of the number of feet of each size of main that was laid during 1923.

By the Master:

I will identify the various mains that I set forth on these two schedules and on this Exhibit 832. That is a diagram, and there may be two or three mains at a point where this merely shows the same line so that it is rather difficult in the case of the Consolidated to show where all those Con-[fol. 2085] solidated mains are. When you get into Queens and up into this section of the Bronx, it is easy for me to indicate these different mains, but the Consolidated transfer mains are spread pretty well over the Borough of Manhattan and in the Bronx, as you can see by the table here. I can locate on this diagram, Exhibit 832, the size mains on the various sections as shown here, that is, if there is one main of a certain size at that point, or if there are two mains of a size. My two exhibits of today cover all the mains shown on Exhibit 832, and nothing else, except that where you see, as I say, the line here which merely means a facility, there may be three mains. It covers those

facilities as shown by the lines laid out on Exhibit 832. These lines as shown on Exhibit 832 are all the mains referred to in the Woods joint facility report. They can be identified with my Exhibits 855 and 854 and with the Woods joint facility report, by description.

Redirect examination by Mr. Ransom:

This shows the sizes of mains and the ownership of them, and that would identify my diagram. For example, that shows the location of the 60 inch steel main in Van Alst Avenue, and that is the only 60 inch main there is, and it shows the 48 inch main tied in at the end, and the 60 running into the other plant, and the 48 going into the tunnel.

(A diagram concerning which testimony was given by witness George E. Woods, in connection with his testimony as to the joint facilities report, marked 8-5758, June 1, 1923, was received in evidence and marked Plaintiff's Exhibit No. 857.)

By Mr. Donnelly:

It is not a fact that some of the Astoria mains in the Astoria tunnel were laid in concrete originally. They were all laid on concrete saddles. Saddles are precast of concrete blocks which have two upright and one inverted U [fol. 2086] in the top. If you can visualize a saddle, it is like a yoke turned upside down, made to conform to the bottom of the tunnel. I had heard some talk in reference to the laying of the mains in the Astoria tunnel that, from the commencement of that work, it had been contemplated to imbed the cast iron pipes solidly and permanently in concrete, but I advised against it and it was not done. It is not so that the determination not to do that was not reached until after 2,850 feet had been lined in that way. It may have been that a plan was formulated to imbed the pipe in concrete after it had been laid by us, but it never was done. I do know that a design was reconsidered whereby the pipes were left exposed and a deck put above them, and I described that deck and told you what it cost to do that.

[fol. 2087] New York, May 20, 1924.

Met pursuant to adjournment.

JAMES E. ALLISON, called as a witness in behalf of the plaintiff, being duly sworn, testified as follows:

I reside in St. Louis, Missouri, and my office is in St. Louis, Missouri, in the Laclede Gas Light Building. I have been consulting engineer on valuation matters for that company for ten years or more. I am consulting engineer of the firm of James F. Allison & Co., specializing in public utilities, the valuation of public utilities; in rate cases, reports on public utility securities, etc.

After graduating from Harvard College, I became a student mechanical engineer in the mills of Hoven & Allison in 1887. They were cordage and cotton mills at Xenia, Ohio, and Zanesville, Ohio, specializing there in machine design and prime movers, and I also became a student engineer in the Xenia, Gas Light & Coke Company, Xenia, Ohio. Subsequently I became general manager of the latter company, and filled that position about a year. I then removed to Nashville, Tennessee, where I became Manager and Chief Engineer of the Southern Manufacturing Company, which manufactured street railway equipment. While there I also acted on occasion as consulting engineer for the United Railways, I think it was called then, in Nashville. Then in 1898, I volunteered for the Spanish American War, and became Adjutant of a Cavalry Regiment.

After the war I went to St. Louis and opened an office as consulting mechanical engineer. I was employed as consulting mechanical engineer for the Department if Admission and Concessions of the World's Fair in St. Louis. I was appointed after that as Chief of the Bureau of In-[fol. 2088] spection of Boilers and Elevators for the City of St. Louis, and Chairman of the Board of Examining Engineers, whose business was to examine and license power plant engineers, and was made Chairman of the Examining Committee for Power Plant Engineers; I stayed in that office a couple of years.

In 1909 I was appointed Commissioner and Chief Engineer of the St. Louis Public Service Commission. I would say that was the third commission in the United States; the

New York Commission and the Wisconsin Commission, I think were the only two that had been established before that. Our business was to make detail valuations of all of the utilities of St. Louis and regulate the rate and service.

In this St. Louis Commission, one member of the Commission was designated as Chief Engineer, and I was Commissioner and Chief Engineer. I had complete charge of the building up of the force and the laying out of the work in the valuation and rate regulation by the Commission. I had entire charge of and supervised the work of the Commission in valuing the properties of public utilities. I also wrote reports or decisions made by the Commission. I was a member of the St. Louis Public Service Commission and its chief engineer for four years.

In 1913 the State Commission was created which took away the powers of the City Commission, and I resigned from the City Commission and went into general practice as a consulting engineer, specializing on utility properties. I took the organized force of the Commission with me and we continued some work for the City, and then, as I [fol. 2089] say, under the name of James F. Allison & Company we engaged in the general practice of utility problems, examining into and studying the operation and valuation of public utility plants, including gas plants, valuations for rate and capitalization purposes, taking business and getting business both from cities and from corporations. I think that we have valued something over $750,000,000 of utility properties, including gas, electric, street railway and telephone properties. I have charge and supervision of all the valuation work of my company.

The first large work after I resigned from the Commission was the valuation of the Laclede Gas Company of St. Louis at St. Louis, Mo. For ten years I have been in consultation with them as consulting engineer on valuation problems and have been in close touch with their construction department, frequently conferring with all of their technical divisions. I have made several complete valuations of all their gas and electric properties.

We made valuations of other gas companies, such as the St. Joseph Gas Company, at St. Joseph, Missouri.

We have done work in this valuation field for municipalities; for example, the City of San Antonio, the City of New

Orleans, the City of St. Louis, where we have a complete valuation of the United Railways Company. We also made a valuation for bondholders of the company and have acted as adviser to a protective commission of bondholders.

[fol. 2690] We do a great deal of work for the Southwestern Bell Company. That is the American T. & T. Company. We made valuations for them both for rate cases and for capitalization cases. We made the valuation for the consolidation of the two telephone companies in Kansas City. We made valuations of water works companies. We have made valuations in Little Rock, Ark., of the water works and street railway for rate purposes and capitalization purposes. We valued the East St. Louis Railway Company property. We made a report on service of the New Orleans Railway Company of the City of New Orleans, practically as referee between the company and the city. They have both agreed to accept our report. I was a member of the Board of Arbitration appointed by ordinance at Buffalo, the Board which made a valuation of the Buffalo Street Railway properties.

At Houston, Texas, we made a valuation of the Electric Light and Power Company and also of the Telephone Company. We made valuations for the Kansas City Telephone Company, the Dallas Telephone Company, the Johnstown, Pennsylvania Gas Company, the St. Joseph Gas Company.

I was also employed to and did make a report on the principles of valuation to the President's Committee on valuations of the railroads of the United States. I was appointed by the Grand Rapids Gas Company a member of the Board of Arbitration under an ordinance of the City of Grand Rapids, for the determination of the value of their property in connection with the fixing of the rate.

[fol. 2691] I had for a number of years been retained as advisor of the Central Union Trust Company on their investments held in trust funds in public utilities. My business was to go around and take their list of securities and make an investigation of each property; and the rate of return was a very material part in advising them as to whether they were good securities to hold in the trust funds.

I have from time to time been retained by bankers and investors to, and do, report on properties and their values. I have been a lecturere at the Washington University on

the economics of public utilities. I have written for publication on the subject of valuation, for magazines, and have published several papers read before different conventions.

I am a member of the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the American Gas Association. I am also a member of various economic associations.

I have frequently appeared before courts and commissions in proceedings involving public utility property values, or elements of values, and have presented the valuations before the commissions and courts.

I have made examinations and studies into the operation and valuation of public utility properties including gas plants, and into their expenditures for operation, maintenance and construction, also made such examination into their accounts and accounting methods. I made investi- [fol. 2092] gations into the question of working capital for gas companies in connection with their finances. I have had occasion to advise my clients, including municipalities, bankers and investors, as well as companies, on the question of necessary working capital.

According to my judgment and experience, the items of assets or property necessary to cover what is commonly termed the required working capital are the cash, the accounts receivable, the gas delivered and not billed, the gas in the holder and distribution system, prepaid insurance, taxes and the materials and supplies on hand. By cash I mean the necessary cash on hand to operate/ the business. There is always an amount of gas that has been delivered to the customer and has not yet been billed, that gas is property used in carrying on of the business, and it would not appear in the appraisal of the property under the head of working capital. It is property in the service of the public. There has been an outlay of money on account of it to bring it into being. It is property that is devoted to the service of the public, and there is always a stated amount that is necessary in the carrying on of the business. It is an item of capital constantly carried and used in the service of the public. If that is not included in working capital the situation does exist where there is an amount of working capital devoted to the service of the public on which a return is not realized unless you arbitrarily put it somewhere else. It belongs in working capital.

The amount of working capital which is the aggregate of these items which I have just specified should not be diminished because of the fact or to the extent that a utility company may owe money to dealers or vendors of materials and supplies purchased. The capital entitled to a return [fol. 2093] is the capital in the service of the public, no matter what the arrangement of credits, or whether it has been paid for or not. We may have a coal pile, for instance, and if I bought it on my credit I have my credit in the business and I have that much capital in the business in that coal pile. It does not matter whether I have paid for it or not. It is that much capital devoted to the service of the public. It is devoted to the public if it is put there for the public service, regardless of whether it is paid for or not. The coal or anything else represents capital devoted to the service of the public. It has nothing to do with the question of whether it has been paid for or not. If a company has given amount of physical and tangible property I would not diminish that by the amount of outstanding bonds. That is applicable to the same situation as accounts payable with respect to materials and supplies. The question whether any part of the elements of working capital have or have not yet been paid for by the company is immaterial. In determining the amount of the property devoted to the service, it is a simple question of how much capital is serving the public. That capital, no matter to whom it belongs, or what the indebtedness is, must have a return on it or it would not go into the service of the public, and it is taken just as capital serving the public, from the amount which is the aggregate of these six items which I have specified as making up working capital. There should be no deduction for accounts payable. The debt on any amount should not be deducted for [fol. 2094] determining the amount of floating capital as distinguished from fixed capital devoted to the public service.

With respect to public utilities, there is a very great element, and generally greatly under-estimated, of cost or value over and above the cost of the tangible or physical properties including the undistributed structural costs. It can be called the going value. I would classify going value as including all value not represented by the physical prop-

erty and the working capital. Other people may make arbitrarily different classifications, but that is what I would call going value. Now that property is called intangible property, because it is not represented by the physical plant; it is not only actually an existing element but one which, to reproduce, would cost money. You have your established business, for instance. Aside from the well known fact that an established business has a value always, you can mor- or less measure that value by an estimate of what it would cost to reproduce it. Persons or corporations who are interested in buying public utility enterprises or properties will pay money for it, just as they will for any other business. I would measure in money this element by trying to estimate what it would cost to reproduce the property and business and all of that cost which did not go for physical plant or for working capital I would say is the measure of the value of the going concern, and the same reason applies to the physical property. To some one who is either going to buy or build—your hypothetical purchaser of a property—the cost to create the intangible property would measure its value, that is going concern value, and a purchaser would estimate the price [fol. 2095] he would give for it by what it would cost to create it just as he would measure what he is willing to give for the physical plant by his estimate of what it would cost to create it. The cost to reproduce the property is the index of its present fair value. It is the nearest index that we have. It is the accepted index. The sum which purchasers were willing to pay for such an enterprise and business would exceed the amount which it would cost to reproduce only the tangible or physical property unless there was some offset feature such as a greatly run down physical property, but if we have a perfectly maintained physical property then the sum which any one would give, if they had the opportunity either to buy or build, would be very much in excess of the cost of the physical property, because if they created the property themselves they would have to expend a great deal in excess of the cost of constructing the property. They woud have to pay for building up the business, that is, assuming the plant and property has been maintained so there is no less of capacity or efficieney and the repairs, renewals and replacements have been made, and

assuming the condition of fair regulations, the sum which such purchasers would be willing to pay would exceed the cost to replace the physical tangible property, assuming fair regulation, and it would cost money to reproduce those conditions and advantages if they did not exist and you would measure this element of going value by what it may be estimated to cost to reproduce them in a particular plant or system, just as you would get your index of value on your physical property.

I am familiar with the rate of return expected by in- [fol. 2096] vestors and public utilities and other enterprises in various parts of the country. I and my firm from time to time are involved directly or in a consulting capacity with respect to financing. From time to time we make studies as to the relative risks attending investments in gas utilities and other utilities in various parts of the country as compared with investments in other industries. The rate of return which a buyer of a utility property would expect to realize hasn't anything to do with the amount of capital. People want a certain rate for the money they put in. Now, it does not matter whether the rate that they are going to get is based on one amount of capital or another. It is confined simply to what rate you are going to give us. There can be no fair valuation where the return is based on the original cost at a rate that has been decided to be confiscatory, but the investor wants to know what is the rate or return he is going to get on the money that he is asked to put in. The necessary basis of calculation the rate of return is on the reproduction cost today. If it is calculated on less than the replacement costs, you could not offer the investor the rate of return which he would demand, unless you sacrificed the equities of the people already owning the property that is, unless the company was earning a return upon a higher sum than the original cost of its property, you could not pay the investor the sum of money—which he demands. Upon his contribution to the enterprise, the rate of return on the property of such a utility enterprise could be based on the rate which would be demanded by a new set of investors to create that prop- [fol. 2097] erty and perform the same service. The amount of securities outstanding does not necessarily determine or show the sum which the enterprise itself must earn a fair

return, nor does the rate of interest at which the utility is able to finance some number of current requirements for new capital indicate accurately the required and proper rate of return. If you are financing with bonds, for instance, and you are giving a greatly preferred security, a return demanded on that bond is, of course, not the return to which the whole property is entitled, you have classes of securities all the way up and down in both cases. The test of the required rate of return is that return which would induce new capital to create this enterprise, and perform this service, and your rate must be such on the reproduction cost as would lead new investors to come in. Unless that condition exists the present investors' capital is being in duress and being made to perform a service for the public at a lower rate than anyone else would do it for.

The market for public utility securities and the source of obtaining investment in public utility enterprises is very seldom a local market. The only financing that is done now locally is what is called customer sales—sales of securities to the consumers. That has come into vogue recently, to a certain extent, but nearly all financing goes to the financing centers, either Chicago or New York, and sometimes St. Louis. The greater part of them come from New York, that is, the initial market for utilities securities nearly all public utilities are controlled here in New York through holding companies. The securities after they are taken through [fol. 2098] bankers and investment houses in New York City are distributed all over the country. The New York houses have agencies in all the large cities, a great many of them do, and they distribute also through the banks. When a New York investment house takes out an issue, it has correspondents all over the country and it offers what they call participation, and they subscribe to certain amounts and in that way the securities are distributed. In that way, I have acquired familiarity with the rate of return usually expected and required to induce investment in gas properties by investors in New York City and vicinity; we must know what it would take within certain limits to induce investment in a certain utility. The rate of return usually expected and required to induce investment in gas properties by investors in New York City and vicinity depends on the property. Each property has peculiarities of its own that

would influence the rate of return demanded by the investor or the investment banker for the investor. By "conditions" I mean risks and surrounding circumstances; different regulation, which is now a very potent factor in the value of utilities securities. I was speaking of utility securities in general; that the property itself would influence the rate of return demanded on its securities. I had in mind the rate of return demanded on its securities. That is a somewhat different figure from the reasonable rate of return, but it is indicative, when added up, of the proper rate of return—reasonable rate of return in a rate case. Public regulation of utilities is now probably the greatest factor of risk in the business. A utility can be kept on the verge of ruin or it can be made moderately prosperous in accordance with whether they have good regulation or not. If you have a condition under which protracted litigation [fol. 2099] produces expense and jeopardizes credit, it is well known by everybody that has anything to do with utilities. The regulation creates most of the risks of the business. Taking in all of the gas companies in this vicinity, as to the limits of the required rate of return, the smaller utilities would have to distribute, in order to get money, about 10 per cent, and they would have to earn somewhat over that in order to get money at 10 per cent. The larger utilities, such as the Consolidated might get money, might distribute somewhat less—nine and a quarter, nine and a half per cent, and get money; but it would have to earn more than nine and a quarter—I mean eight and a quarter—it would have to earn more than eight and a quarter in order to get money at eight and a quarter. It would have to distribute eight and a quarter. In other words, there would have to be a margin of safety there. It would have to earn perhaps between 9 and 10 per cent—9½. Assuming that the Consolidated Gas Company operates and sells gas in the Borough of Manhattan and the City of New York and that it has manufacturing plants, including that of the Astoria Light, Heat & Power Company, with about 153 million cubic feet of gas daily, and that it supplies more than 650,000 consumers through about 988 miles of mains, selling during the calendar year 1922 more than 20 billion cubic feet of gas and during the calendar year of 1923 more than 24 billion cubic feet of gas, it would not be practicable or possible

to interest investors in the acquisition or establishment of a public utility enterprise of that character in such a territory upon an expectation of earnings less than 8 per cent upon the cost of buying or building such a property at the [fol. 2100] present time. To attract them upon the basis of an expectation of earnings of not more than 8 per cent it would take considerably more than 8 per cent to attract them to create the whole enterprise. In fact, with the enterprise going and no initial risks, it took over 8 per cent to get new money into the Consolidated Gas. Unless there was at least such a rate of return, it would require more than 8 per cent. We know that it does require more than 8 per cent of earnings. A company is obliged to earn somewhat more than it distributes. The ratings of companies mention that. They must have a margin of safety over the distribution.

Cross-examination by Mr. Donnelly:

Speaking of working capital, I should think, the amount of cash necessary to have on hand would to a certain extent, depend upon the volume of business as the company is doing. It might not be in exact proportion to that. In fact, the amount of capital necessary to do one volume of business by one company might not be the same as required by another company doing perhaps the same volume of business. The amount of cash required is a matter of experience of the operating officials. They generally know what they have to have. The different companies have different uses for money. If you had a great volume of business, you would naturally expect that the cash required would be greater than if you had a small, but I would not say that it would vary in direct proportion. As to the amount of [fol. 2101] money necessary most gas companies the larger ones, anyhow, have different days of collecting on through the month, and each man that pays for his gas has had his gas for thirty days. You see, he is billed back for thirty days, he is billed with thirty days of gas. Then it takes maybe two weeks or a month before the bills are out and he pays them. Now, it does not matter whether they are collected one day, the next day, or the next day, each man has the capital of the company in his possession or devoted to his use—working capital—for something between six weeks

and two months, because they do not collect it all on the first of the month, it does not make any difference. If you, for instance, are a consumer and I am a gas company, I have to furnish you with gas thirty days before I make you a bill and then it takes me sometime to do that before I read your meter to find out how much you have consumed in the thirty days. Then I make you a bill. Then it takes some time for me to get the money from you, and my capital has been serving you for between thirty and sixty days. A public utility like a gas utility, for instance, has to have, of course, certain materials with which to manufacture the product. The quantity of those materials does not necessarily depend upon its output. The quantity of materials in store depends upon the judgment of the operating officials as to possibility of getting out of materials. The purchase of material to manufacture depends on the amount of material in the whole year. But the amount held in working capital might vary. In the case of a gas company a certain period of time elapses between the deliveries of the ma- [fol. 2102] terials which it uses in its business and the time that those materials are actually paid. I did not pass on when they were paid. Take coal, for instance; that is the principal material; or oil. Deliveries are made on the blank day of May, we will say and the bills are paid for on some day subsequent to that. It may be a week; it may be ten days; it may be fifteen days; perhaps it may be as much as a month. Taking that case, the amount of the cash necessary to have on hand depends to some extent, at least, upon the period which elapses between the delivery of the materials and the payment for the materials by the utility—not that you would have to have on hand either. If you paid cash for everything—your coal, for instance—you would have more cash working capital, but you would not have it on hand. You see, you would not pay for it immediately. That cash would be out in the hands of the people who furnish the supplies instead of your credit being out. You would not have any more on hand one way or the other. It is necessary—in fact, indispensable for every public utility to have a certain amount of cash on hand with which to meet its obligations, and its obligations mean the payment of the bills rendered for the materials that it uses in manufacturing its products. As to the amount of that

cash necessary to have on hand for the purpose of discharging those obligations depending to some extent upon the period which elapses between the time of the delivery of the materials and the time of the payment of the bills, I do not think after the first delivery it would make any difference. [fol. 2103] There is a certain average amount of cash that is held on hand all the time. For a great many different purposes, for payrolls, for instance, and for paying current bills, as you say. Now, then, if you discounted all your current bills as soon as they came in, you would have more cash capital, but you would not have any more on hand, if that is what you are talking about. I am not sure whether I am misunderstanding what counsel means by "cash on hand" or not. Cash on hand is the average balance carried in the bank. Now, then, if all things were paid for in cash, I do not believe you would have any more after you once begin that and keep all your bills discounted—you would not have any more cash capital on hand than you would if you did not. Suppose there were some materials as to which there were no discounts for prompt payment but that certain period of credit was given to the utility. The amount of working capital would not vary. In one case you would have your working capital in the form of your credit and in the other case you might have it in a credit maybe in bank where you had borrowed the money, but it would be just the same thing; you would have the same amount of working capital. But working capital there might be credit or it might be cash. You might have a large cash and a small credit, or a large credit and a small cash. The amount of working capital that a public utility needs is not dependent on the extent to which it enjoys credit; it does not affect the working capital all. A part of working capital is credit. Then if you had a period of six months' credit for the discharge of the bills for materials, [fol. 2104] I do not think that would affect the necessary amount of working capital. I have not assumed anything in regard to what amount, of materials the Consolidated Gas Company would buy within a calendar year. I did not make any assumption with respect to the time or times when deliveries of materials would be made or of the time which would elapse between the date of deliveries and the date of payment. I have not given any testimony as to the amount

of necessary working capital. I have simply stated the elements that formed working capital. I gave the items to be taken into consideration in arriving at the total amount of working capital necessary for any gas utility.

For the purpose of giving that testimony as to working capital I did not visit the plants of the Consolidated Gas Company because I was not to testify as to the exact amount nor make any examination or study of the books of account of the Consolidated Gas Company. I am not testifying as to the amount of working capital that the Consolidated Company needs.

I certainly would include something for going value for a concern such as the Consolidated Gas Company which has been in the gas business since 1884. That would not make any difference as to going value, how long it had been in business, unless it had not been in business long enough to create a going value. As to whether going value should be included, where the public utility is a long established concern or one that just simply came into existence yesterday, the going value might be different in the two different cases, but if there is going value, of course, it ought to be included. Going value is a fact. By two different utilities, you refer to one that has been established since 1884 and the other is new. They are two different utilities and the two different utilities might have two different going values and different as to amounts to be allowed for going value. There are [fol. 2105] two different instances that you are giving me. Including something for going value, as to whether there would be any difference in the case of the acquisition of a public utility property by a purchaser and the case of an estimate based upon reproduction or replacement cost of the public utility's property, the reason that we use reproduction cost as a measure of present value is that, under fair regulation, it would induce the creation of the property, and it cannot be fair otherwise; that is approximately the actual amount of money that a purchaser would give for it if he were going into the gas business. So we use reproduction as the nearest index of present fair value. If I were asked to make an estimate of going value of a gas public utility, in the case of the acquisition of the public utility's property by a purchaser as distinguished or contrasted with an estimate based upon replacement or repro-

duction cost, in my mind they are the same. That is, in the first place, you cannot have any such thing as a statement of value without the hypothesis of an exchange. You cannot measure value otherwise. There can be no measured value without the hypothesis of an exchange. The nearest measure of what this property would exchange for under fair regulation is the cost to reproduce it, because your hypothetical purchaser would then have the choice of either buying or building, and the figure he would have in his mind would be the cost of building, and if your property were as good as the one he would build he would buy rather than build, and that would create an exchange and a measure of value. A hypothetical purchaser would pay the same amount in money that would represent the cost. To re- [fol. 2106] produce that going value, to build up the business and make any other expenditures necessary to put the enterprise in the condition in which it is now.. In other words, I would not assume that a hypothetical purchaser might purchase the property of a gas utility at a figure somewhat lower than that represented by its replacement or reproduction cost. If you had a willing buyer and a willing seller, he could not get it. He could not get it for less than what it would cost to reproduce new, because the willing seller would know that he could afford to pay that for it. The willing buyer would pay that for it if regulation were such as would induce him to furnish the gas service that was being furnished by the property he was going to buy. He has to be induced to furnish the service. That is fair regulation. The elements which would induce him to invest are the reward he is going to get for the investment of his capital. That depends generally upon regulation. The reward under fair regulation for an existing utility should always be such as would just induce someone else to perform the service, and then you have a value for your property—an actual value for your property very close to the reproduction cost.

The cost to reproduce is the nearest practical index that we have of present fair value. The original cost of the property hasn't any more to do with determining its present fair value than the cost of a bale of cotton last year. If you have a bale of cotton now and you want to know what it is worth, you do not care anything about what it cost you

last year. You find out what a similar bale of cotton will sell [fol. 2107] for today. I put a bale of cotton upon the same basis as the land, buildings, structures, equipment, appurtenances, machinery, and so forth, of a gas utility so far as ascertaining present value and the introduction of original cost. They are both commodities. In both cases we are setting up the hypothesis of a sale in order to get a measurement of value, and that is what we are doing with our bale of cotton; that is what we are doing with our gas utility. If I were going to get the present fair value of the property, what the property originally cost would not have anything to do with reproduction estimate of the properties of the Consolidated Gas Company. The earning capacity of the company is one of the elements very much to be taken into consideration in valuing the property upon a reproduction basis, but in order to get a hypothesis of fair value we are assuming certain earnings, that is, earnings enough to induce someone else to create the property. The earning capacity of the utility is one of the elements that I would take into consideration in determining its present fair value but to get its fair value you must have a fair return under regulation. We do not have to include an estimate of its earning capacity, because you assume a fair regulation, you assume that fair regulation will give it earnings which will induce someone else to build. Otherwise, the present owners of the property are being compelled to perform the service at a less reward than anyone would willingly do it for. So your assumption won't have anything to do with your calculation. I won't say [fol. 2108] that I would not consider anything else. Those are the two principal elements. You assume a reward which would induce someone else to build this property. Then you say: How much is the existing property worth to that person who is going to build, and you get then the hypothesis for a fair exchange at a fair value.

The rate of return has nothing to do with the amount of capital; the rate of return demanded. You see, you as an investor or I as an investor may come into this enterprise and you find out all the risks of it and now you might take into consideration whether it was properly capitalized or not; that the rate of return after you have considered all of these things, then what makes you go in or stay out is

the rate of return. Your rate of return would depend on your entire study of the property and a great many things. You see, if he is assured of his rate of return, if he regards his rate of return as a sure thing, why, then, that is the only factor; but if he says, "I am not sure of getting this," then he begins to look around and see what factors would influence it, influence the risk of his not getting it. The amount for which the concern was capitalized would be one of the things that he would take into consideration before he embarked his capital in the enterprise. As to whether investors in a concern capitalized for $100,000,000 would expect the same rate of return as those who were asked to embark their capital in a concern capitalized at $10,000, from the nature of such things I would say that it would depend entirely upon the safety of the two different amounts of capital. You might invest $10,000 in Government bonds if you call that an enterprise, and you [fol. 2109] would not want as much as if you invested in Consolidated Gas Stock. The rate of return is the reward necessary to get new money. The amount of securities outstanding might have an influence on the person going in. It all depends on whether they thought there would be a sufficient earning power. The size of it—just mere size hasn't much to do with it; it is the risk. The market for public utilities securities is very seldom a local market. The market for public utilities securities does not directly enter into my determination of what is the rate of return demanded by prospective investors. It is about the only way you can get an idea as to what they will demand. You have lists of utility stocks. You know what they are selling for—stocks, bonds and preferred stocks. You do not get a direct figure for it, for what is the fair rate or return, because a company may be divided up in such a way, having a large amount of bonds, creating then a large risk on the equity of the stock, which would entitle that stock to a very high return. On the other hand, you might have a company in which, if it was all stock, you would get tolerably close to the demands of the investor as to what he would take that stock for.

The stock of the Consolidated Gas Company is selling for a little over 8 per cent basis now. I do not know what it was selling for yesterday at the close of yesterday's market. I

only keep in touch with it in a general way. I do not know the fraction. It is 63. I read it yesterday in the paper—63, 63½, one of the two and that 63 or 63½ will represent just about 8 per cent. Supposing it were selling at 75, it [fol. 2110] would represent a less per cent. I would have to make the calculation. You divide 75 into 50, and you will get it. The amount at which the stock of a public utility may be selling at the moment is not one of the factors which determines the rate of return. What you are trying to get in regulation is what you could get all the capital for. It is a somewhat different problem. You can say this with certainty, though, that you would not get it for less than the rate at which it was selling in the market. That would be the minimum. Each property has peculiarities of its own; I was not referring to the peculiarities of the several plants. Two different properties—one an old property and one a new property, and there immediately came to my mind properties also of different sizes, different locations. I could not answer counsel's question without saying that the properties might be entirely different and require different answers. When I used the term "peculiarities" I meant all kinds of differences in the property, and I did not have in mind at that time particularly physical property. I was thinking more of the situation in regard to regulation and prospective business and other things of that sort is what I had in mind then. Different conditions was the phrase I used. Each property has different risks, different regulations. The regulation of gas public utilities in the City of New York differ between two different ones in the city of New York. Of course, you have constantly being passed statutes here regulating gas prices. Now, that might affect one property in a different way from what it would another. You take any of the smaller companies might be affected in a different way from what the larger [fol. 2111] one would be. I would not say they do; that that is necessarily true; it might be so. When I answered Counsel's question I did not have in mind that the two properties were to be located in the same city; but I do not think that would change my answer any. If you have two different properties exactly alike and under the same regulation exactly, why, of course, you have got pretty nearly identical things. Public utility properties have different risks and

different regulations. It is a thing that every one knows, that any two business enterprises under different conditions have different risks. It would be a very peculiar thing if you had exactly alike, in the same city. They might be very close to being the same thing, but still there might be some difference. It is just like saying there are two things exactly alike. There are not two peas that are exactly alike. The rate of return which investors in a public utility enterprise would expect and demand might differ according to the locality in which the particular utility is doing business. The difference in demand might not depend upon that. There might be that difference. I should imagine there would be a difference between the rate of return expected and demanded by prospective investors in a public utility enterprise in the City of New York as contrasted with the City of Chicago. But you see, those differences in demand might depend upon other circumstances. For instance, you might have investors demanding a certain rate from a plant located in Chicago and another rate from a plant located in New York. Well, it might be on account of the difference in location and it might not. It might be for some other difference—difference in management. I do not know whether it would be greater or less in Chicago as compared with New York. Take a gas property in Chicago and a gas property here. You would not [fol. 2112] find them exactly alike. There would not be the same thing. They would be operating under different conditions. You take out there they buy great deal of their gas as a by-product. Whether the investor or the banker would consider that an advantage or not, I do not know. As to whether there would be different rates of pay in Chicago as compared with New York, for labor, I am not informed of that. I would imagine not a very great difference. It might be. There would probably be a difference in the cost of coal. All of those factors might or they might not enter into it, determinative, of the rate of return expected and demanded by prospective investors. I do not say that we have the same rate of return for public utilities as we have in Chicago. I do not know what rate of return is paid to the stockholders in the People's Gas Company of Chicago. I do not know whether it is a good deal under eight per cent. I am familiar with the rate of return paid

to stockholders of gas companies operating in the City of St. Louis. That is my own home town. They have been getting fourteen per cent on their stock. All kinds of gas is manufactured in St. Louis. A part of the operation is the same as in New York City and part is not. We have what we call a balanced plant out there.

Gas companies in the City of St. Louis are subject to public regulation, by public utility commissions. Regarding the rate for gas prescribed by the Commission for consumers in the City of St. Louis, they have a sliding scale. I do not carry it in my head. I think the highest price is a dollar or ninety-five cents, I have forgotten. They have [fol. 2113] been paying their regular seven per cent dividends and declaring what they call a recoupment dividend for a period of regulation when they were not allowed to make a dividend. The maximum price paid by consumers in the City of St. Louis is either $1, $1.05 or ninety-five cents. It is right along in there. It runs down, I think, as low as sixty-five cents; but I do not carry that schedule in my head. I do not know what is the rate prescribed for gas service in the City of Chicago, in the City of New Orleans, or in San Francisco. We have those things in the office to refer to. I do not carry all those things in my head. I cannot carry the dictionary in my head. Perhaps there is more demanded from a utility located at other places than New York, but not on account exactly of location. Size has a great deal to do with it. The small utility, for instance, which may be free and safe in regard to a loss of capital, demands a high rate of return because it is so small you cannot sell it, and you have to sacrifice this. When you get larger companies and a broad distribution of securities, that feature disappears. People are willing to buy at a less rate of return than a small one that they are not so sure of selling and that might influence the rate at which the securities would be invested in different localities when difference in locality would not be the factor that would determine the difference in return. There are so many factors going into it. I do not see how the rate of return demanded and expected by prospective investors differs in the Borough of Manhattan as compared with the Borough of Richmond. If the prospective investors were asked to em- [fol. 2114] bark their capital in the New York and Queens

Gas Company. On Staten Island there is a gas company which is considerably smaller. I do not know what the prospective investors would demand, but that is contrasting a tremendous enterprise like the Consolidated Gas Company in the Island of Manhattan with a little gas company over here on Staten Island. In order to get the money for the smaller one, that would require a higher rate of return. My judgment is that the smaller one would require a larger rate of return. How much larger, I do not know. I testified in the New York & Queens Gas Company case before the present Master. I think I said a distribution of more than ten but the earnings more.

Should the plant and property and equipment of the New York & Queens be located in the Borough of Brooklyn and not in the Borough of Queens, I imagine the same sized company, other things being equal and equally good management and all those things, my testimony would be the same. I think I said ten per cent distribution in the Bronx case. The fact that determined ten per cent in the case of the New York & Queens and eight per cent in the case of the Consolidated Gas Company were the size of the enterprise. Many things can happen. It is a matter of risk to a great extent and many things can happen to little properties that do not happen to big properties. I think one of those properties, The New York and Queens Company and the Consolidated Gas Company had a non-saturated territory which might make its securities less desirable. Principally it is a question of size. I assumed that [fol. 2115] all of the conditions under which the two plants respectively operate are well operated. You could take into the word "conditions" all kinds of risk. There is a risk from the size of that property as to what might happen to it if the property stood by itself, and you were asked to build it. That would increase the risk—the smallness of the property. If the two companies used varying amounts of labor and material for the manufacture of each thousand cubic feet of gas, if there were one price for the gas of both properties, that is, for the gas in one or the other, then the company which paid the most to manufacture gas would be at a disadvantage. If more quantities were used per thousand cubic feet that would be a disadvantage. I think that considerably more than eight per cent would

be required to induce prospective investors in order to get money into the Consolidated Gas Company. I do not know anything about the loans which the Consolidated Gas Company has been making within the last two years to its affiliated companies, but it would not influence me as to my opinion as to what outside investors would go into the Consolidated Gas Company for. That has nothing to do with it, in my mind. The size of a loan and the rate of interest charged on the loan would not affect my determination as to what entirely outside investors would go into the Consolidated Gas Company for. Assuming that the Consolidated Gas Company recently floated a large issue of stock to its own consumers, which was offered and taken at 6 per cent. that would not affect my judgment, either. Preferred stock at six per cent and the small amount of it on the Con- [fol. 2116] solidated Gas Company is a very choice investment, and you would naturally think it could be put out at a less rate than the rate at which the whole body of money could be gotten. I do not know anything about the offer by the New York and Richmond Gas Company which operates on Staten Island of its stock to its consumers at seven per cent.

There are no gas companies located anywhere within any of the five boroughs of the City of New York that I have ever had under my supervision. I have been in a consulting capacity. I have never had any occasion to make any examination of the companies under which the respective gas companies operate in the City of New York, that is, of the conditions under which the respective gas companies operate in the City of New York, that is a technical operating part. I have never been called in on that. I have never had occasion to examine any of the physical properties which do business in the City of New York. Assuming that the Consolidated Gas Company started in business in the City of New York in the year 1894, and, at the time it began business in November, 1884, it took over some other gas companies which had been operating here from the period of 1823 to 1876; assuming further that at the time the Consolidated Gas Company began business in 1884 its annual output of gas had increased each and every year and that according to the statistics kept by the company that its volume of sales is still on the upward plane, that shows

that there is still an increasing demand for gas; that is about all it shows. An increasing earning capacity upon the part of the Consolidated Gas Company would depend also upon the amount of investment required to meet those demands and on the amount of investment required to pro- [fol. 2117] duce a certain amount of profit, and it would depend, of course, much more than that on the amount of property they are allowed to earn on. All gas properties generally can earn more than they are allowed to earn if there is no public regulation. Assuming that there was no public regulation of the gas companies operating in the City of New York, they would arrange their prices just as any one else in business would, to bring probably the greatest revenue. Of course that is a situation in which, having a monopoly, there would be a great many complications entering into it. The fact that public utilities or this utility has a monopoly of the gas business in the city of New York is a factor, of course, in determining a rate of return. It is a factor of risk. If it did not have a monopoly, why they might be subject to competition that would make the securities much less desirable. That is true of all public utilities, and it is one of the theories of regulation in order to have public regulation at all, you must have in the first place a monopoly. That is conceded—that is part of regulation. In giving my estimate of eight per cent I assumed that the Consolidated Gas Company enjoys what monopoly of the gas business it has in Manhattan and the Bronx and I assume it has a monopoly of the gas business in the Bronx and Manhattan—somebody might dispute that if they found a little gas company—but I assume it has a monopoly there but that, of course, was not the main factor. The main factor is my knowledge as to what money does come into this company for. If the Consolidated Gas Company had a competitor in its own territory, it might affect my judgment as to what the investors ought to demand. [fol. 2118] Sometimes they do not change their demands in accordance with what I might think it ought to be. In arriving at my judgment of an eight per cent return, I did not give any consideration to the question of the operation of a franchise under which the company is operating, because while the expiration of franchises are always held up as bugaboos, they are always renewed. People cannot

be without the service. You say a franchise is going to expire, and if I knew a franchise of a company that I was investigating was going to expire before the securities became due, I would consider that as a fault, but, as a matter of fact, we all know that franchises are renewed. A prospective investor ought to take into consideration freedom from or absence from competition as one of the elements but nobody does. There are so few places left where there is competition. In so far as the Consolidated Gas Company or its operations are concerned, there is not any element in the risk of competition on the island. The same thing holds true of the Borough of the Bronx. I am not sure I know the sum for which the Consolidated Gas Company is capitalized. I think about $150,000,000 but I am not sure that that is right. I might say that I am not accurately informed on that. I do not know how much of its capitalization is devoted to its gas business. That was not one of the factors, one of the elements that I took into consideration in arriving at my estimate of the rate of return. I simply know that, in the recent issues of securities of the Consolidated Gas Company, that the public demanded somewhere over eight per cent to put their money in. That is the factor [fol. 2119] which interested me in dealing with rate of return in this case more than anything else, because it is the fact right in front of you that that is what the public did demand. I am talking about common stock. The public paid for that issue when the issues were for sale at 60 or a little over, and that is what they were willing to put their money in for and it pays $5 per share, and that makes a return of about 8¼ per cent. I am referring to the issue of $30,000,000 in 1923, and that is an indication of what the people were willing to invest their money in the Consolidated for, but that does not represent the return that the company must have because people would not put their money in for eight and a quarter distributed unless they thought that the company was going to earn more than that.

Redirect examination by Mr. Ransom:

If it is a fact that, as recently as December, 1923, the company in securing $30,000,000 out of a total capitalization out of approximately $180,000,000 common stock found that said $30,000,000 issue had to be sold to the public on

the basis of 8¼ per cent, I would say that to obtain the entire amount of money necessary would, of course, require a higher rate of return. The fact is that, in any enterprise, in getting the entire amount of money, that runs up generally the amount of rate that has to be paid for it. Assuming that the Consolidated Gas Company has no bonds outstanding, I do not think the fact that the issue of $15,000,000 out of its total capitalization to be put out in preferred stock to employees and consumers would influence my judgment on the fair rate of reasonable return. It is more or less of an incidental issue for certain purposes to get the employees and consumers interested in the company. I think regulation brought about effects similar to those at one time supposedly produced by competition with respect [fol. 2120] to rate control and the like. The effects produced by competition—it was a sporting proposition. The effect of regulation has been discouraging, of course, to new enterprises, because I think there has been only one new gas enterprise within the last ten years, and that is a very small one in Idaho, and Idaho is one State where the Supreme Court states there should be no deductions for depreciation. The fair regulation, as I have referred to it, is such regulation as will not prevent the creation of public utility enterprises, which will give such rewards or allow such rewards to be earned as will induce investors to embark in such enterprises. Speaking of rates and the revenues from rates, such as would make other and new investors willing to put up the required amount of money to buy or build and furnish the service, the return must be realized upon the present fair value of the enterprise. That present fair value is measured by replacement cost of the physical property plus replacement cost the going value, plus replacement cost of working capital. I do not mean to say that the physical property might not have been so neglected as to lower its value below the cost of reproduction. With that exception, I would say yes. You get your present fair value from the index of the reproduction cost and, in a well maintained gas property, the value is practically the same in nearly all cases.

With respect to the Consolidated Gas Company or any other gas company in the Consolidated Gas Company system, the required amount of working capital is the sum of

the aggregate of these elements. With respect to the element of cash, let us assume a company which paid all its [fol. 2121] bills on the day on which they were received and let us assume a company of the same size and volume of operation that paid all its bills two months from the date they were received, and did that invariably, the amount of cash on hand would not vary as between the two companies. There would be practically the same amount of money, regardless of whether they paid spot cash or whether they invariably postponed two months.

Recross-examination by Mr. Donnelly:

My eight per cent figure applies to the Consolidated Gas Company alone. I wish to understood that, in my opinion, the Consolidated Gas Company, and by that I mean the Consolidated Gas Company alone must pay—that the rate of return to which it is entitled is between 8½ and 10 per cent. It must be at least 8¼ distributed and perhaps between 9 and 10 per cent earned to get the money. This sliding scale is brand new. The earning capacity would have to be over 9 and perhaps nearly 10 per cent. I have in mind the earning capacity of the Consolidated Gas Company and its volume of business. The answer that I gave of 8¼ to 10 per cent was a statement based on the fact that very recently that company has had to pay 8¼ per cent in order to get money into its organization. Now, that is what that is principally based on. Whether the gas is turned out from one set of water gas units or from another does not necessarily govern. It is based on the Consolidated itself.

I have not seen the complaint of the plaintiff in this case. I do not know what the demand is. The Consolidated Gas [fol. 2122] Company paid 8¼ per cent to have money put in its organization. When it issued—I think it was 30 million—a recent issue of common stock which came out under a dividend payment of $5 a share. That sold for about 60 and that would make 8¼ per cent. It did not borrow it, it was selling it to the public. The public has that money in the business. I know from the figures that 8¼ per cent was paid. They paid $5 a share dividend and the public paid $60 a share for the stock, which makes 8¼. It is a fact that everybody knows, that they did pay 8¼ for the money. I know it is true for I saw the stock quoted and I know it was

issued and it is just as practical—I know it is just as true as that the Bonus Bill has passed over the President's veto. I did not go to see anybody about it, but I know it pays $5 a share.

By the Master:

I have included in my definition of going value all elements of value—and some people do not do that. There would be the costs of building up the business. Supposing I was going to buy from you this business and you say, "Well, I have this business already built up" and then I wonder how much it is worth and how much I can afford to pay, and I try to estimate how much it would cost me if I just bought the plant and built up the business. The cost of establishing the business is a very great one. There is also the cost of assembling capital. That by some people is put in a different category. It would be the cost of financing it today, which is the measure of the value of the accomplished financing as it stands today. That is one of the elements of the cost of financing such a proposition to-[fol. 2123] day, would be a definition of going value. Such items as interest during construction engineering and superintendence and taxes during construction—would come under construction costs, because they are attached to construction. I consider them as included in the tangible properties. They are part of what we call the overhead costs in construction, but it is merely an arbitrary classification. I do not include as part of going value, a company operating at a loss there may be during the earlier years. But in estimating how much it would cost you now, starting out in business, you might possibly measure it as a deficit in return in the future. That has nothing to do with the question that is often brought out by capitalizing past deficits. That is merely a method of measuring what it would cost you to establish the business and paying for all other costs in addition to construction costs. I would include as one of the methods of going value of the business by establishing what it would probably suffer, not what it did suffer in establishing the business. That is an expense and you would have that as a part of the capital amount you would have to supply. You would be depriving yourself of the return for a certain number of years.

Redirect examination by Mr. Ransom:

The going value to which I have testified is the present cost of developing the position of an established business. It has nothing to do with the past. I have not taken into account actual or pioneer losses. The fact that there had been actual, 30 or 40 years ago, pioneer losses, have no bearing on your present going value whatever. Past deficits are not a factor in my determining present going [fol. 2124] value. The fact that the books did or did not show any quantities of cost actually experienced with respect to developing the business, or pioneer losses during the earlier years of operation, would not have any bearing on the present going value. Omissions and contingencies, taxes during construction, interest during construction, administrative, legal and general expenses during construction, contractors' expense and profit are assigned directly to structural costs. They are called overheads. There is a cost of financing an enterprise as a whole as distinguished from the cost of financing the construction of the physical property. Of course, there is a greater cost for financing the whole than simply for financing the construction. This is one of the elements in going value, the possession of capital for the whole enterprise. You have to assemble more capital than you need merely for the construction of the physical property, and according to such concept of going value. I would include in going value the cost of assembling the entire capital of the enterprise.

[fol. 2125] Allen G. Hoyt, called as a witness in behalf of the plaintiff, being duly sworn, testified as follows:

I reside in New York City, Manhattan. My business is investment banking. I am Vice-President in charge of public utility financing of the National City Company. I have been engaged in such business about 20 years, that is in the financing. In investment banking, about 20 years. The National City Company engages in financing gas companies among the public utilities which it finances and the securities for which it purchases and sells investment banking only and it buys from utility companies including gas companies and sell to the public the securities of such utilities.

It also finances other industries engaged in the purchase and sale of their securities.

Before becoming an officer of the National City Company I was a member of the firm of N. W. Halsey & Company which specialized largely in public utilities. N. W. Halsey & Company not only sold the bonds and preferred stock of public utilities, but it owned securities of and loaned on securities of certain public utilities. It managed and operated, and I was a member of the Board of Directors of some of the utilities, so I have had some experience in the general direction of utilities as well as on the banking side. The place of business or head office of N. W. Halsey & Company was in New York City. They had a number of branches throughout the country. The main office of the National City Company is in New York City. It has branches outside of New York.

I negotiate and purchase from the companies which desire to sell and issue particular securities of these bonds or [fol. 2126] these preferred stocks and then arrange, either alone or with associates, to distribute those securities. In the course of my business, including my services as director of companies, I have become familiar with the management, operation and financing of public utilities including gas companies. I am not familiar with the details of operations.

Either alone or with associates the National City Company participates in a very large proportion of all of the public utility financing done in the United States. It amounts annually to several hundred millions. Primarily the securities are underwritten in New York City. They are distributed in New York and throughout the country. That is, the public utility gets the money here and turns over its securities to the bankers, depending on the market conditions with respect to such securities. The bankers purchase them, in the first instance, and then usually invite smaller dealers to participate and then distribute throughout the country. New York City is by all odds the most important market for the financing of public utilities, including gas companies throughout the country.

I am in a general way, familiar with the returns expected and usually realized by investors in other classes of business than gas companies in New York City, and with the

rate of return over and above the operating expenses which is expected and usually realized by buyers of public utility properties in New York City and vicinity. I am also familiar with the difference of risks and investments in operating gas facilities in the City of New York as compared with the risk attending investments in other commercial enterprises in that vicinity.

[fol. 2127] The rate of return that a buyer of a utility property would expect to realize would have to be figured in my opinion upon the cost to buy or upon the cost to build at the present time. If we can imagine capital embarked in an enterprise and it was a new undertaking of course the capital would have to have a return upon the amount used in building the plant new at the present time. If we imagine capital embarked in an enterprise because it purchased a plant already in existence, it would have to have a return, of course, on the purchase price. Now, that purchase price presumably would be determined by the seller and the seller would fix a price upon the duplication cost of the property, in present day dollars, because he would know that the buyer could not duplicate the property under present unit prices for a less amount than that. It seems to me that it is a matter of common knowledge that the dollar has depreciated. The dollar today has a much less purchasing power than it had in pre-war days. In other words, the dollar is merely a measure of value. Your yardstick is short. The yardstick of today is only two-thirds as great as it was in pre-war days. We have a two-foot yardstick now and certainly if we are going to measure the value of anything it is going to require a greater number of those units of two-thirds of the former size than would be required if the measuring unit had never shrunken. If your return was not such as to give effect to the present purchasing power of the dollar, in my opinion is would be impossible to attract the capital for the purpose of putting in new money in large quantities or the sum of money necessary to start such an enterprise as a whole, except on this basis.

The obligation of the purchaser of the utility is to provide [fol. 2128] service and in order to provide service and adequate service that means that they must provide enough capital to pay the taxes, the expenses, the interest on loans, to meet the maturity of loans, and, more important than all,

it must obtain capital for extensions required by the business—extensions necessary to give the service which the public demands. The managers or those having responsibility for the utility have no alternative but to get the necessary capital to pay what it costs, or the utility is headed for the rocks. There is no question about that. It is impossible to refrain from procuring capital for having the extensions to plant and distributing system, even in a period of the more higher price levels. It has been my experience that companies sometimes have been required to raise money at very high cost, that is the cost of the capital was high and the cost of the construction was very high, but it was impossible for the utility to defer these expenditures, notwithstanding such conditions. The investor in a public utility property such as that of the Consolidated Gas Company and its affiliated companies on the transfer system in Manhattan and the Bronx and Long Island City, takes risks of casualties, but I regard as the greatest risk that inherent in a business under regulation, and it arises in this way: a company may be charging rates which permit it to pay operating expenses and leave an adequate return on the fair value of the property. There comes a change in conditions, operating expenses go up, wages go up, materials go up, &c. The utility, however, cannot immediately increase the rates it charges in order to recoup the increased operat- [fol. 2129] ing expenses. It must go to the public authorities and ask for an increase. There is a hearing. It almost never happens that the utility obtains an immediate increase but there is a lag, in my experience, which is against the utility, and for a considerable period it operates under inadequate rates. On the other hand, if after the rate has been increased, there is a decrease in operating expenses, the commission is very quick to come to the utility and ask it to reduce its rates. It very often happens that, even before the decrease has been realized there is an agitation for it, and, of course, utilities suffer from agitation, and finally this agitation may result in very unfair legislation and the companies are put to a great burden and great expense in combating unfair legislation and unfair regulation, and so forth, which is a very serious matter. I think such risks or factors existent with respect to utility investments in the City of New York are particularly prom-

ment with regard to investments in New York. We all know that capital is proverbially timid and it hestitates to embark in an enterprise where there may be an attack which would tend to make the rate inadequate compared with the risks involved, and the risks of the expense and delay caused by litigation are one of those hazards. By risks of casualties, I mean uninsurable casualties and possible catastrophies. The major risks relate to regulatory and legislative requirements. Assaults on the values of utility properties are one of those risks or hazards. They have a decided bearing.

According to my experience and knowledge which I have acquired in the capacities which I have described, the rate of return usually expected and required to induce invest- [fol. 2130] ment in gas properties by investors in New York City and vicinity is at least 8 per cent. With respect to the whole capital requirements, I think it would be the minimum. The rate paid for relatively smaller amounts would have no bearing on the rate of interest for which the utility may obtain at times all or part of its current requirement of capital for additions and extensions. The rate at which some part of the current money could be obtained through the issue of bonds or even preferred stock would have practically no bearing.

The sale by the Consolidated Gas Company of $30,000,000 of its stock took place the latter part of last year. That is, the money came in in December of 1923. The company offered 600,000 shares of no par value to its stockholders at $50 a share. I think that the company could not have offered that stock to the stockholders and have felt reasonably confident that the stockholders would have taken that large amount unless the price was made 50, although there were occasional sales and perhaps quite numerous sales at 60. The stock would not have been taken for this reason: Some of the stockholders, of course, could not take their pro rata share. They had to find somebody else to take it, and that someone else had to see a reasonably good purchase in order to take it. Furthermore, I feel that that stock could not have been sold—that large amount, 600,000 shares—unless the company had been paying five dollars a share dividends on that stock and unless there was a rea-

sonable probability that that dividend would be continued, and if I am not mistaken, while the Consolidated Gas Com-
[fol. 2131] pany has been paying five dollars a share dividends on its common stock, the earnings applicable to the stock run perhaps seven or something over that, so that we had an earning power of about something like 14 per cent on the amount received for the stock, that is, earning power from the gas business and from other sources, including the electric business. This offering price of $50 per share for this non par value of stock was fixed to a degree upon my advice. Indirectly I conferred with some of the people who had something to do in fixing it. I do not think under the conditions that obtained at the time it would have been sound business judgment for the company to have counted upon obtaining the whole $30,000,000 which was at that time required if it had offered this stock on a less favorable basis than $50 a share, or a ten per cent basis, that is, that sound business judgment would have been exercised, had they put the price above that. I do not think they would have been able to dispose of that stock to the general public, that is, if the offering had not been confined to the stockholders on any different basis. In fact, it was offered to the general public. I mean to say, there was a market all the time. Anybody that wanted to buy the stock could have bought it. Existing stockholders merely had the first right to buy. There were issued rights which ran with the existing shares. A very large number of the rights were commonly separated from the ownership of the existing shares and sold on the market by stockholders who could not or who did not wish to subscribe for their pro rata amount. My opinion is that there was some underwriting or arrangement that in addition to offering the stock which was necessary to realize $30,000,000 of the com-
[fol. 2132] pany's total capital at a price of $50 per share, or on a 10 per cent basis, it was necessary for the company also to pay something by way of compensation for the underwriting of the sale of the stock at the $50 price to protect the company in the event there had been a very serious disturbance to the markets, that is the company was under the necessity of getting the money at all hazards.

I am familiar with the territory in which the Consolidated Gas Company and its affiliated gas companies in the Borough of Manhattan and the Bronx and Long Island City furnish gas, especially familiar with the territory in the Borough of Manhattan in which the Consolidated sells gas. I see that more frequently. Assuming that the Consolidated Gas Company operates and sells gas in the Borough of Manhattan and has manufacturing plants, including the Astoria plant, through stock ownership, of about 153,500,000 cubic feet of daily capacity, and that the Consolidated Gas Company supplies more than 500,000 consumers through about 985 miles of main, selling during the calendar year 1922 more than 20,000,000,000 cubic feet of gas, during the calendar year 1923 more than 24,000,000,000 cubic feet of gas, in my judgment it would not be possible to interest investors in the acquisition or establishment of a public utility enterprise of that character in such a territory upon an expectation of earning less than eight per cent upon the cost of buying or building such a property at the present time. Unless at least such a rate of return were earned and distributed, it would not continuously be possible to attract capital or investment by the general public in New [fol. 2133] York City and vicinity in order to provide extensions to the plant and property. The company might get a small amount, but it could not function over a period of years unless there was that earning power, or more, at least. I mean that at particular times they might get a small amount of capital if they were earning less. I do not think you could attract the capital necessary for an indefinite period on a less expectation.

Cross-examination by Mr. Donnelly:

The National City Company is not affiliated with the Consolidated Gas Company. The stock of the National City Company is trusteed for the benefit of the stockholders of the National City Bank. The City Company and the City Bank are affiliated. There may be some common directors. There is no stock that is common to both the Consolidated Gas Company and the National City Bank, as far as I know. There may be. There may be some stockholders who are both stockholders in the bank and the gas company. I should hope so; but to what extent I do not know.

I just met Mr. Allison today. I know him by reputation. I know the publication called Financial Chronicle. That is a well recognized journal that circulates among bankers and brokers here in the City of New York and used by them to a considerable extent for purposes of reference in the matters in which that publication deals. At the present [fol. 2134] time, I am a member of the Board of Directors of the International Telephone & Telegraph Company; the New York Steam Corporation; the Kansas City, Clay County & St. Joseph Railway Company. I am not a member of any of the boards of directors of any of the gas companies operating in the City of New York and do not know anything about the conditions under which the gas companies in the City of New York operate in so far as the manufacture and delivery of their products are concerned. I did not have something to do with the management of the gas company but, as the directors have something to do with the management, I did have something to do with the companies with which I am connected or was connected while a member of N. W. Halsey & Co.

Our company made no loans to gas companies operating in the City of New York within the last year. Within the last two or three years we loaned the Consolidated Gas Company on one and two years' notes twenty million, twenty five million, two or three years ago. They were seven per cent and eight per cent I think. I do not recall it at the present time that there were any less than seven. I am not familiar with the loans made by the Consolidated Gas Company within the last two years to its Astoria Company, the Astoria Light Heat & Power Company, and know nothing either as to the amount of money that was loaned or the rate of interest at which the money was loaned.

Speaking of the loans that the City Company handled of the Consolidated Gas Company, they happen to have been secured by New York Edison Company stock, which had a very high collateral value, and therefore the rate was reasonable. Now, the rate at which a company can borrow at the bank depends, of course, upon its general credit. The rate at which it may borrow or obtain capital by preferred [fol. 2135] stock or by bonds depends upon the amount of the bonds or the amount of stock as compared with the

total assets of the company. If it is a very small amount, the loan will be very secure and will be floated at a reasonably low rate of interest. The rate at which a company like the Consolidated Gas Company may borrow money depends upon factors that would not apply to a company not so well situated financially as it. The rate at which the company might borrow relatively small amounts of money would have no relevancy as to the rate which would necesarily have to obtain on the whole project in order to build it or enable it to continue to function. Speaking of relatively large amounts of money, the rate of interest at which money could be borrowed would not be the same for small amounts for the New York and Richmond Gas Company as it would be for a concern of the size of the Consolidated. Of course, the New York and Richmond Gas Company could not obtain a very large amount on any terms because of its comparatively small size, and its comparatively smaller amount of resources upon which it may borrow. Generally speaking, those are elements which constitute the ease or lack of ease with which a concern may borrow money for temporary purposes, or on occasion, that is true.

Speaking of certain risk that attend the operations of gas companies in the City of New York, the element of competition in the gas business was not one of the risks I had in mind. I might say that if the franchise situation of the Gas Companies, as I understand it, had been less favorable, the rate necessary to attract the capital would have been higher. In so far as the franchise situation [fol. 2136] under which the gas companies in the City of New York operated is concerned, I would characterize that as favorable, in its duration. I am not familiar with whether it is burdensome or not.

I do not recall exactly what the purchasing power of a dollar is today as compared with the middle of 1920. Probably the purchasing power is a little higher now than it was then. I am under that impression that about the middle of July or August of 1920, prices generally speaking had about reached their peak. Beginning July or August of 1920, there was, for a time at least, I think a recession from the then existing level of prices. There is,

not substantialy, any difference, speaking of now, the present day, in so far as the purchasing power of the dollar is concerned, in the City of New York as contrasted with other cities in the United States.

I do not know how capital requirements of the Consolidated Gas Company within the last year for the purpose of making additions and extensions to its gas plants were subdivided. It is impossible to hazard a guess as to what the trend of prices will be over the next ten years, in my opinion. I would not care to make any prognostication as to what the price levels would be for a period ensuing ten years from now. Prices have come down a little, I think.

One of the elements of risk which affects public utilities operating in the City of New York is the delay that would ensue after an application had been made to the regulatory body, to wit, the Public Service Commission, for an in- [fol. 2137] crease in rates, if the Public Service Commission had complete jurisdiction. I assumed that the Public Service Commission only had partia' jurisdiction on account of the law passed by the legislature fixing the rate of gas; that is the extent to which I regarded the matter of fixation of rates as being limited in the City of New York. I think the law also referred to quality of gas; so that they do not have complete jurisdiction either on rate or quality because of the act of the legislature. It has been my experience that utilities in New York and in other cities and other states experience a considerable delay after they make their application for an increase or rates before they can prove their case and get an order and have it effective granting an increase. In giving my testimony, I had in mind experience of the New York Telephone Company which had made an application through the Public Service Commission for an increase of rate; that the Public Service Commission either denied it or failed to act upon it, and that the company immediately applied to the Federal Court, which very promptly granted the increase which it asked for, and of course, I understood that while a temporary increase was granted to the telephone company it may have to give it back to its consumers when it is finally tried out. They have not got a clear title to that excess; could not disburse it in dividends. If a public

utility made application to the Public Service Commission for an increase of rates and found that its offer had been denied, it might apply to the Courts, but it might take it three or four years to get the increase of rate and get a title to the excess; I mean to get a title to its increased rate, even though the Court might very promptly grant the in-
[fol. 2138] crease that the company had applied for. That does not help the company a great deal, however.

With regard to the percentage of rate of return the location of the utility would be one of the factors which would determine the rate of return. It would be different in one borough of the City of New York as compared with another borough. The difference would probably lie in the size of the company serving a borough and that there would be, I would say, a little greater risk and a little greater difficulty to obtain the capital to finance the smaller company. It is not really a question of the difference in the character of the people, but it is a difference in the size of the company that makes it a little more expensive to raise the capital for the companies serving one of the outlying districts.

I did not testify on the subject of rate of return before the present Master in the New York and Queens Gas Company case. In a general way, I am familiar with the locations and the operations of the New York and Queens Gas Company. I know that the New York and Queens Company is controlled and owned by the Consolidated Gas Company. I rather think the difficulty that I spoke of in obtaining money for launching of a new gas enterprise would apply to the New York and Queens. The fact that it had at its back the resources of the Consolidated Gas Company has no bearing on the case, in my opinion. If you are going to imagine that somebody is going in to build a plant—we will assume, first, that there is no plant where the New York and Queens is. Now, somebody is going in
[fol. 2139] to build it. Now, anybody that was going in to build it would expect to provide good management; they would expect to provide necessary capital; they would expect to give it good credit. What more can the Consolidated Gas Company do. Or else they would not embark in the enterprise. Why should the Consolidated Gas Company

advance money to the New York & Queens and take a less return upon it than anybody else would advance money to if, considering the risks and so forth. The Consolidated Gas Company may buy Government bonds; it may advance its money to the New York & Queens; why should it advance money and expect to take a less return than anybody else would? As to whether the condition under which the different gas companies operating in the City of New York do conduct their operations, that is, the manufacture and the delivery of their product, I do not know whether those varying conditions of operations would likewise be a factor which would determine the rate of return. When I gave my judgment as to rate of return I assumed that the company had an efficient manufacturing plant; that its property was in good condition and that it was efficiently managed, but I would expect that to be the situation if you are going to raise the capital. The annual output of a particular company has something to do with determining the rate of return, in other words, if the annual output of one company was smaller, relatively, as compared with another company, that in the case of the smaller company the rate of return would have to be more.

[fol. 2140] If the fact, as I know to be the case, that the output, the sales, the cubic feet of gas sold by the Consolidated Gas Company, remains relatively constant or increases from year to year, it shows stability of business but has no relation hardly to the stability of the net income, which depends upon the relation of the sale price as compared to the cost of manufacture. The amount of the annual output has no direct relation to the annual income. The income is dependent upon the relation of the sales price to the cost of manufacture and distribution. If the company were one like the Consolidated, whose gas sales have increased year by year since the time of the organization of the company in 1884, and its present experience showed that it was very fair to assume that those increases in the gas sales would continue during the present year and for the year after that, that would be a factor which would be in an influence. That is why we say at least 8 per cent in New York City; but in a smaller place or outside, it would have to be somewhat higher. Take the case of a company like the Consolidated and assume the fore-

going conditions, if somebody was to buy the plant they would certainly take into consideration in the company's gas sales increasing every year. The fact that it was reasonable to assume that business would not go backward, that the demand for gas would not go backward, that the output would continue or might increase, would be taken into consideration. I mean to say in a smaller situation where perhaps on account of business depression the sales [fol. 2141] of gas might go down, in financing a situation of that kind they might say, "Well, the first year we must have 12 per cent because two years hence we may only get 7 or 8." The costs of manufacturing may vary somewhat and do vary all over the United States. It is never the same in two places. Now, the investment varies—the investment per meter varies. In all cases I think the capital embarked in the enterprise would expect a return upon the investment; and that return would depend, as I said before, on the difference between the selling price and the cost of manufacturing and distribution. That sale of the stock of the Consolidated Gas Company at $5.00 a share on stock selling at $50, would mean 10 per cent upon the purchase of 50. This rate of eight applies only to the Consolidated Gas Company; its own properties as distinct from its subsidiaries. As far as I can see, it would make no difference whether the gas company—Consolidated Gas Company—owned outright its generating plants or whether it had an arrangement to buy the gas. The investment of the gas company, if they owned the Astoria outright, would be so much the greater and it would have to have a return on that additional equipment. If it did not own it outright, why, it has got a lesser investment and a lesser return. The investment would be larger and it would have to have a return on the total investment, whatever it might be, at least 8 per cent on the investment.

I stated, I think, that I thought the gas company should have at least 8 per cent on its investment in distributing gas and making it, so far as it does make it. I am not famil-ar with just how much it makes and how much it [fol. 2142] buys at Astoria, and, as I said, it does not seem to have any relevancy to me. My figure of at least 8 per cent is upon the reproduction cost of the properties as of the present time. In giving my estimate upon a reproduc-

tion estimate, I would regard reproduction or replacement cost of the properties and the price at which a prospective customer might buy the properties as synonymous in that presumably a seller would ask the reproduction price, because that would be the natural measure of the value of the property. Suppose you had the case of a prospective customer who turned out to be an actual purchaser of the properties; I do not think the amount at which the company is at present capitalized would have much relevancy. Some little relevancy, perhaps. I do not think it would affect the rate of return which the buyer would expect to receive, however. In other words, what I mean by reproduction cost is the cost of physically reproducing the properties as they are, at the present prices of labor and material without any regard to the question of the amount at which the company was capitalized.

I have made a study of the rates of return earned by gas companies in cities other than in the City of New York, to some extent. I know only a few of the rates prescribed for their gas service by the regulatory bodies in the localities in which they are doing business. Conditions of manufacture differ, and the rates prescribed by the regulatory bodies likewise differ, both of which last two factors are factors which determine the rate of return. They would have some bearing, of course.

No group of capitialists would purchase a property in [fol. 2143] some section where they believed it was impossible to get a reasonable return upon the investment. They might expect one rate of return in one section of the country and another rate in another, as the conditions might vary in the different localities and the rates of money in the different localities would affect it for corresponding classes of investments, or other classes of investment. The risks and hazards in the undertaking would vary. What I have attempted to give here is the rate of return demanded by a prospective investor. Otherwise it would be impossible in my opinion, to attract the capital necessary to construct the plant, and the expectation of the prospective investor would be on the assumption that the property was to be physically reproduced at the present prices of labor and material.

Redirect examination by Mr. Ransom:

Regarding notes put out by the Consolidaed Gas Company several years ago, the cost of the money to the company was over 8 per cent. I think the first issue were eight per cent at par, weren't they? I have forgotten that. I cannot tell at the present time. I do not think they were put out at 98. They may have been underwritten at that. I cannot recall. I rather think they were put out at 100 with a brokerage fee of 2 per cent. The cost was over 10 per cent on that basis, and they were retired and superseded by seven per cent notes. I think the money market conditions had changed somewhat and they were sold at a premium and the brokerage fee was somewhat less, but I think the actual cost in that case was something over 7 [fol. 2144] per cent. I do not recall exactly; when I referred to the reproduction or replacement cost of the properties I meant the replacement cost of the properties and the business as it stands. The rates of pay of labor in 1924 were rather higher in 1918 and rather higher as compared with 1919 and early 1920.

With respect to prices in 1924, especially as to materials in which labor costs is an important factor, as compared with 1923, I do not think there is much difference; perhaps a little higher.

By the Master:

I do not think there would be much difference, as to the rate of return that would be required for investment in gas properties, between an investment in New York, in the Borough of Manhattan, and Chicago, and a difference between New York and Philadelphia, for instance. A large City which has sufficient size to attract that stability of business which the Consolidate Gas and similar Companies have, there is not a great deal of difference; a little perhaps.

No question that the Consolidated Gas Company, as to the stability of its business, is favorably situated, and so is the People's Gas of Chicago, The Laceled Gas of St. Louis, and so forth. Not very much difference. It is a little easier—well, I would say very little difference. The stocks of these other companies are listed in New York. A part of their capital would be raised, perhaps, in New York in any event. Not a great deal of difference.

By Mr. Ransom:

In respect of risks and as attracting investment, the legislative and regulatory conditions affecting public utilities, notably gas in New York City, are unfavorable as compared with other parts of the country. There is no doubt about it, whether justified or not, a great many investors are a little shy of investing their money in situations subject to the attack that Consolidated Gas Company is and has been subjected to. It makes a difference, and that applies to other gas companies in New York City as well as the Consolidated, to a lesser degree, but all of them to some degree. Perhaps I withdraw that, "to a lesser degree." I think they are about all the same, on second thought.

[fol. 2145] Recross-examination by Mr. Donnelly:

The dividend paid to the stockholders of the People's Gas Company of Chicago is $7 on $100 a share, and The People's Gas Company is in a poor way; I do not recall just what the maximum rate is in Chicago. I know that the Chicago company is subject to the jurisdiction of the Illinois Commerce Commission and that the Illinois Commerce Commission not long ago directed The People's Gas Company to lower its rates. The People's Gas Company, in order to protect its credit, must sell some more stock. In order to sell stock, it has got to pay $8 dividends and it must earn a good deal more, and it has got to have higher rates if it is going to attain the high credit position which will enable it to finance economically and provide the service. I think The People's Gas Company of Chicago did voluntarily reduce the rate. The results have been disappointing. I don't know the exact contrary that the results have been extremely gratifying to the people responsible for the management of that company. I know Mr. Insull quite well. There was some discrimination on the part of investors against the Consolidated Gas Company by the public bodies here in the City of New York. I think that certain investors are rather hesitant to invest in the securities and stocks. I do not think I testified that there had been discrimination against the Consolidated Gas Company, as compared with other gas companies

operating in the City of New York, which discrimination in turn, frightened or scared off investors.

I have read the provisions of Chapter 899 of the Laws of 1923, popularly known as the Dollar Gas Law, which is [fol. 2146] now the subject of this litigation. I know that the dollar gas rate and the standard of gas described there apply to all companies operating in the City of New York without discrimination.

Redirect examination by Mr. Ransom:

I am not sufficiently familiar to answer the question whether, within the past two years the Illinois Commission undertook by order to reduce the rates of The People's Gas Light & Coke Company and the State Courts set aside such reduction. It is my impression that the People's Gas Company never accepted the valuation found by the Illinois Commerce Commission. I am not positive whether the Court set the order aside and then the company put into effect voluntarily some reduction in rates.

[fol. 2147] Henry R. Beal, a witness in behalf of the plaintiff, recalled:

Direct examination by Mr. Ransom:

My inventory and appraisal of the Astoria Light, Heat & Power Company, buildings, structures and appurtenances was made up in the same way as the inventory and appraisal of the buildings, structures and appurtenances of the Consolidated Company concerning which I testified last week. It is set out in the same form with respect to summaries and detail sheets and I have shown the units and the unit prices, quantities and the like, as inventoried, in a similar fashion. Without going over every detail of the testimony my testimony of last week with respect to the buildings, structures and appurtenances of the Consolidated Company would apply to this exhibit as to the Astoria Light, Heat & Power Company.

Since I was on the stand, I conferred with Mr. A. S. B. Little, one of the engineers employed by the defendant Attorney-General, two afternoons, that included and cov

ered Astoria as well as those which I testified about last week.

(Document entitled "Astoria Light, Heat and Power Company, Astoria, Long Island, Inventory and Reproduction Costs as of June 1, 1923," was received in evidence, and marked Plaintiff's Exhibit No. 858.)

I completed with respect to the buildings and structures of the Astoria Light, Heat & Power Company a statement of the expenditures necessary to put such buildings in the condition in which they were when new. This statement is made up in the same way as the similar statements which were put in evidence last Tuesday and I have shown with respect to each structure the nature of the work that would have to be done to accomplish that result, and the sum of money which, in my judgment would reasonably — spent in doing the indicated work. This statement is true and cor-
[fol. 2148] rect on that basis.

(Statement entitled "expenditures necessary to put the buildings of the Astoria Light, Heat and Power Company in the Condition in which they were when new," received in evidence and marked Plaintiff's Exhibit No. 859.)

Exhibit 858 is a statement of reproduction costs on a sub-contract basis. It is in that respect made up in the same way as the exhibit put in last Tuesday.

In making my inventory and appraisal of the General Office Building of the Consolidated Gas Company, I appraised them as a total for building and appurtenances.

[fol. 2149] New York, May 21, 1924.

Met pursuant to adjournment.

Henry R. Buet, a witness in behalf of the plaintiff, resumed the stand.

Cross-examination by Mr. Donnelly:

The word expenditures, as used by me in Plaintiff's Exhibit No. 839, entitled "Expenditures necessary to put the buildings of the Consolidated Gas Company in the condition in which they were when new," includes replacements

and repairs. I could not tell offhand how much of our total expenditures is for replacements and how much for repairs. I think I could tell by looking at the various items listed in the exhibit. As an illustration, on page 1, entitled "Consolidated Gas Company, 11th Street Works, Building L. M., Office and Shops," and so forth, under the list given under that heading of "Building L. M." the item there which would be a replacement would be "Replaced Floor in Carpenter Shop, $235," also the "New Stone Sill, $20." These are the only two items that I have of actual replacement, although the glass could be considered replacement. The balance of the items are repairs under that building. I do not know whether or not the company actually charges to repairs the items which I have picked out as being replacements. I do not make a distinction between replacements and repairs, in this exhibit.

In preparing Plaintiff's Exhibit No. 839, I personally examined each item of property included in my exhibit. I examined it personally at the building, made the estimate up myself and had the notes transcribed in typewritten form as you see them. I went into such details as were necessary in my judgment to make a complete list of repairs, anything that I saw the building needed. I examined [fol. 2150] in a practical way the various portions of the buildings. I turned on some faucets, examined some doors and some windows as to their condition, but I did not examine every door and every window. My examination was made by feeling, examining with a penknife, scraping these items. There were a great many reasons for scraping with a knife. One is to test the solidity of the timber, to see if any rotting has occurred. Another is to see if the paint has a clinch; see if the plaster has become soft; see if the floor is rotted. You use a knife for testing the scale, whether the paint has started to scale, whether there is rust occurring underneath the paint. In the case of a rotting floor, very often it is visible to the naked eye and very often it is not. Generally a floor shows signs of giving out by wear rather than by rotting. You can judge a great deal from the appearance of a floor whether it has been down for a long while and whether it is in condition to be removed or repaired. The visual decision would be the first decision. If there was any question in my mind whether the floor had rotted, then I would use a knife.

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Generally I would say the principal reason for the rotting is the location of a floor, whether it is subject to moistness or dampness, whether it is a cellar floor. For instance, in the case of a wooden floor in the cellar it would naturally rot sooner than a floor which was continually kept dry in the inside of a building on the upper floors. That would [fol. 2151] be a limiting point. That floor would show evidence of being affected by the moisture upon a bare visual examination of it. I have in mind a floor in a cellar where the board showed excessive warping, although the surface of the board was apparently in perfect condition, and it showed no signs of rotting visually, yet the fact that it had warped would show that there was the presence of moisture and that would cause perhaps premature rotting and that would cause me to examine it further if I questioned in my mind the advisability of removing that floor and including it in this list. Very often a new floor warps the day it is put down. It is very difficult to pre-determine what is going to cause a floor to warp. It is not necessarily something that happens after the floor has been laid, it sometimes happens before it is laid. The timber itself warps sometimes before it becomes a part of the floor. We might put that kind of timber in the floor.

In Generator house A at the 11th Street station, I examined the walls for which I estimated $60, would be required for slight pointing. Upon examining those walls, I walked all around the building and looked at them. The joints were open in those walls which indicated that they required pointing. When I speak of pointing, I mean renewals of mortar in the joints and cracks in the wall. The necessity for this pointing would be apparent to any builder [fol. 2152] by a mere visual inspection of it. This slight pointing is principally a matter of appearance and would tend to make the wall tight against moisture. The building would not suffer from the lack of pointing for a long period of time. I estimated the cost of the slight pointing of those walls by the amount of time it would take. I figured here six days for a mason or about three and a half days actually with a helper and a very small amount of material.

Speaking of all the expenditures included in Plaintiff's Exhibit 839, it is a fact that the necessity for repairs or replacements was one which would be apparent to anybody

competent to make an inspection and examination. The item "Sash, doors and glass $1400." is made up of—"Replace the broken glass; repair or replace the doors; and make such repairs to sash that were broken." The way I would define "replacement" would be replacing the entire outfit with a new outfit. The expenditures which I have given in Plaintiff's Exhibit 839 were such as I deemed necessary to be made as of June 1, 1923. As to how long a good lock would last in a door exposed to the weather, as on an outside door along the waterfront where it is subject to action by the salt air, I would say that Sargent, Yale, & Towne all make solid bronze locks, absolutely rust-proof for the purpose of use in salt air, and they can practically be used under water, if necessary and both of those makers [fol. 2153] make a cheap kind of lock where the tumblers are made of steel and can corrode in a week after you put them in. The life of the best lock made would be indefinite. I have a cheap lock on my kitchen door, which has been exposed to dampness and it is still in existence after seventeen and some odd months. Rusting occurs gradually and not suddenly. With regard to a lock composed of highly superior metal that won't rust, there is a minute wear in a lock that is constantly used and all continuous wear is cumulative, and the necessity for such repairs which were caused by the action of the elements and wear and tear actually existed in that lock to some extent for quite a while, but not to such an extent as could be noticed by any impairment of functioning or by anything but actual inspection, involving the opening of the lock and examination of the parts thereof. That lock would be still functioning exactly like a new lock, in an operating condition, and as good as new for the purpose for which it was intended.

In making my estimate for repairs, I did actually go to the trouble of finding out the condition of every part of the building to a certain extent. I did the thing in a practical way in order to satisfy myself as to the condition of the building. The way I examined those buildings was by going around and examining the outside, operating a door and a window here and there, but I did not operate every door [fol. 2154] and window. I open a trap door when I see one, but I do not take down any of the plaster for an ex-

amination of the pipes. I open and shut certain doors and find that they are operative, and if they are not I make a note in this list. The material ordinarily put into a stairway in a building such as the office and the 11th Street Station consists of the carriage, treads, risers, nosing, strings and facing. After the stairway had been put in brand new, I would say that in a certain length of time the treads would have to be removed and very often the hand rail stiffened. As to the rest of the items in the stairs, their life would be practically indefinite. After the stairway had been put in brand new the repairs which would become necessary would depend upon the amount of use and wear and tear the stairs are subjected to. The position of a stairway has a great deal to do with the time in which it wears out. For instance, the stairway which adjoins a yard where there is sand and cinders will wear out much faster than a stairway which is only subjected to the wear and tear of persons with clean shoes. And likewise, of course, if there are metal treads put on these wooden stairs, nonslip treads, that would prevent the wood ever wearing out. The stairway that is in pretty constant use with people walking up and down it might last from 12 to 25 years before repairs would be necessary, depending upon the kind of wood [fol. 2155] of which the treads were made. The oak tread of course would last longer than the pine tread. In all the recommendations that I have made for new treads in this list, I have replaced all treads that showed any signs of wear. I would say that a tread on the stairs which had worn down an eighth of an inch would be observable and would give evidence of being worn and after repairs with a new tread, would be as good as new. The wearing down process on the treads had been going on gradually for perhaps ten or fifteen years. I replaced and repaired many objects here which are only partially and sometimes very slightly worn or damaged. I have provided in my estimates for all repairs the necessity for which was observed as of June 1, 1923, or at the time when I examined the build ing.

The roofs of the several buildings included in my appraisal are constructed of several kinds of material, such as slate, tar, gravel, concrete tile, regular tile and some tin roofs. There would have to be boarding or some other

material underneath to support the tin. The life of a slate roof is indefinite, and snow and dampness getting under the slates and raising them, would cause them to crack and break, which would require a replacement of the slates. A severe winter will bring more repairs than a warm winter. Cypress shingles are now used quite a lot in roofing outside of Manhattan. I do not think there are any cypress shingled roofs in my appraisal. It is not a fact that as soon as the roof is put on brand new the action of the elements be- [fol. 2156] gins to wear it down. I was referring to damage due to ice when I was speaking about the deterioration of the slate roof. The action of the elements would have an effect in wearing out a tin roof, and the same thing might hold true of a tar and gravel roof. There is nothing in the action of ice and snow that would cause the tin roof to deteriorate except it might rust from dampness if it was not kept painted. With reference to the slate roof comparatively few out of the entire number of slates which compose the roof remain intact, especially around the ridgepole where they are in a dry condition and those near the gutter, and if the slates are kept repaired, the roof has an indefinite life. The slates that require replacement are taken out and replaced with new slates. A roof continues to function until it leaks and a roof may start leaking very suddenly—the process has not been gradual but has been very abrupt. In the case of a leaky roof there has not necessarily been a gradual process of deterioration going on. It is very difficult to say what causes leaks. I have spent a great deal of my life trying to determine the cause of leaks and sometimes it is impossible to tell what it is due to, whether a shifting or deterioration on account of the flashing—it is a very difficult question. A tin roof usually leaks from some object striking it, or a plank with nails in it will injure a tin roof in one blow. I have seen roofs a great many years old that have not been leaking from rust or any other cause. The absence of paint causes the rusting. A tin roof would have to be painted every [fol. 2157] three years to prevent rust. The factor that determined the amount of painting of the tin roof where I have included such an item in my appraisal was the appearance of the paint and the amount of scale. It is not always a definite thing. I have probably got roofs painted that did

not need it at all. I might err in that, or there may have been roofs that needed painting, but as a usual thing you can determine when a tin roof needs paint. I do not think I omitted many which required painting.

All of these buildings included in my estimates are subject to actual deterioration through wear and tear, use and action of the elements and other causes. Practically all the deterioration would be observable and repairable, I do not know of any item offhand that would not be observable. In order to find out whether or not there had been any deterioration in a pipe, I would judge that entirely by the manner in which the water ran through the pipe. The condition inside the pipe is not of interest to me, except as to whether or not water comes out at the other end. I did not make any inquiry or study of the respective ages of these buildings or the parts thereof, nor of the relative intensity of the uses to which these buildings and structures were put. I examined the condition in which they were, not as to anything that had gone on in the past or anything in the future. A builder could determine the extent to which there had been deterioration in a building from an observation without any information of any kind as to the amount of deterio- [fol. 2158] ration which had occurred in the building, how old the building was, and the relative intensity of use of the buildings. I would not know how to determine the age of a brick wall which had been pointed or painted recently or within the last year or so. There would not be deterioration due to the age itself. As to the age of any particular building, I could tell only the comparative appearance of one building with another. Different construction might in certain cases be a cue in determining the age of the respective buildings. From my experience in the building business I know the effect of weather conditions upon buildings and structures in the City of New York. With reference to the relative effect of weather conditions upon brick and frame buildings, if both are kept thoroughly painted—the deterioration is no greater on one than on the other. The weather conditions would have no effect in the way of deterioration on buildings whether brick or frame. Whether ordinary wear and tear and use caused a certain amount of deterioration in brick and frame buildings depends upon the construction of the floor, principally—the wearing

parts. A brick building might have a wooden floor and many brick buildings have wooden floors, and a frame building might have a concrete floor, so that the determination of whether a building was a frame or brick building would not determine their susceptibility to wear and tear. I would say the effect of wear and tear and use on the outside of the building is generally the same in brick buildings and frame buildings, for the reason that the only portion is around the window frames which are generally wood, in both cases. After a building has been constructed brand new, in my [fol. 2159] judgment it begins to need repairs four, five or sometimes seven years after the building had been occupied. The causes for those repairs may be accumulating or they may be immediate. By all expenditures necessary to put the building in a condition equal to new I mean a new building in a plant that is under full, practical operation. I would say that while the cumulative deterioration had been going on, the building was still as good as new. I would say, with reference to a building twenty-five years old having a greater expense of upkeep than a building seven or eight years old, that that might be so in some cases, although I would say that the maintenance expense is quite constant. In fifteen or forty years you might have certain renewals but those would be periodical rather than annual and — is rather difficult to determine an annual cost of maintenance as compared with the period of the first seven years. Within four, five or seven years there would be some repairs due to wear and most of the repairs would be due to renewal of paint. After the seven year period has elapsed, the replacing of the paint would be very constant throughout. After a period of years certain replacements become necessary, but they would be periodical in that they would be every three or four years and might be fifteen to twenty years or forty years. It is conceivable that a building might only require paint in a period of twenty-five years. The expense of the upkeep of an old building is as little as a building which has been up for five, [fol. 2160] six or seven years, and I think the maintenance of that building is quite constant over a long period of years, and it would be the same ratio as far as the expense is concerned. A great many parts of a building have indefinite life, for instance, the wood in a building has an indefi-

nite life, with the exception of wood columns and sills which are on the ground. Certain parts of the building have definite life and they have to be replaced. Stairways, floors, paint of all kinds, repairs to plaster; window frames have an indefinite life, but sometimes the sills, also the blind stops have to be replaced. Sash sometimes needs re-puttying, but does not have to be replaced. Brick and stone and masonry portions of the building rarely have to be repaired. The plumbing, if it exists in the building, has to be repaired and the life of the wiring in the building is indefinite; hardware sometimes has to be renewed, and floors, have a definite life where they are subject to wear. Covered floors have an indefinite life. An oak floor will last longer than a pine floor and a concrete floor will last longer than an oak floor.

Referring to Voucher No. 26908, in favor of the Sherwin-Williams Company for $180.93 for paint used, I have not included that amount in my Exhibit No. 839 because I have not seen the voucher before and I do not know anything about it. My Exhibit No. 839 is an estimate of repairs and I could not include a voucher in a list of repairs. This voucher dated November 19, 1923 calls for so many gal- [fol. 2161] lons of paint, but I see nothing on the voucher which shows the paint was used.

Voucher No. 16,660, which is dated July 17, 1923, has an item "Furnishing Irving Subway Flooring Type 'G' 2" deep $258." I do not know where in Exhibit No. 839 I have included anything for Irving Subway flooring type. This is charged on the back as "Repairs of Works and Station Structures at the 11th Street Station."

Exhibit No. 839 represents my judgment and opinion as to the amount necessary to be expended as of June 1, 1923, to put these buildings and structures in as good condition as when new. As to whether or not I have included in that part of Exhibit No. 839 which deals with the 11th Street station the item on voucher dated July 7, 1923, I can not identify what Irving Subway flooring type G is, I do not even know what kind of flooring it is and I never heard of it until you spoke of it a moment ago. The blueprint which is attached to this voucher refers to bars. It looks like reinforcing bars; shows 352 straight bars and 320 articulated bars. Since it contains reinforcing, I do not see

how it could possibly be a repair, as they would not put reinforcing bars in a repair job. However, it is apparently charged to repair account.

Authorization No. 218, dated July 6, 1923, calls for repairs to foundation of 500,000 gallon oil tank at the 11th [fol. 2162] Street station, including repairs to supporting timbers, brick walls and raising of moat well $7,500. I have foundations included in my appraisal, but not a foundation for a tank, nor anything included in my Exhibit No. 839 for repairs to supporting timbers, brick walls, and raising of moat well.

Voucher No. 28070 refers to furnish labor and material as required to install electric wiring in Governor Houses 3 and 5 at 11th Street Works, as per contract, but does not say what the wiring is, or anything about the contract. I have no means of telling from this voucher what this work is, but I notice on the back of the vouchers that they are both charged to repairs of works and station structures, 11th Street Station. I cannot say where in Exhibit No. 839 I have included either of those items, because I do not know what it is for. Voucher No. 28071 refers to making vapor proof throughout in order to conform with electrical specifications for gas. Apparently it has something to do with making the globes vapor-proof, which may be a requirement of the underwriters in a gas plant, but I do not know that, and it is not a repair of any kind; it is new work, although it is endorsed on the back, "chargeable to repairs." I cannot identify those items in that part of Exhibit No. 839 dealing with the 11th Street Works which calls for wiring. I do not think there are any wiring or electrical repairs now. Assuming that glazing is not painting—it is sometimes included as a painter's job—there are a few items in that part of Exhibit No. 839 which deals with [fol. 2163] the 11th Street Works. Those few items of painting are in the first building, L. M. Both repairing the door and repairing the window guard would include paint—$8. Repair window guard; next to the last item is for painting. Of the $16, two or three dollars are for the paint. On the next page, Scrubber House II, repairing front door, would include paint. As to how much of that $12 would include paint, it is very difficult to say. Sometimes the principal item is paint and sometimes it is princi-

pally woodwork. On the coal shed K W W-1 replace 5 sheets of corrugated galvanized iron; that would also include painting. About $5 of the $40 would include painting. Likewise the corrugated galvanized iron—$34. About $5 of the $34. would include painting. The sash and stops on the next page No. 3; tar separator pump house E and oil house; would include a certain amount of painting at about $2. Whitewash rafters, of course, is entirely paint and that is $10. The last item on page 3, stable T, repair gate of shed, includes painting and approximately $2. or $1. of that $20. is for painting. On page 4, storage house R, new iron shutters have to be painted about four or five dollars worth. Repairing door in the stove storage building would be included in the repairing of that door at about a dollar or two. That foots up $48 altogether for painting.

[fol. 2164] New York, May 22, 1924.

Met pursuant to adjournment.

Henry R. Burt, a witness in behalf of the plaintiff, resumed the stand.

Cross-examination continued by Mr. Donnelly:

(Voucher No. 1365, dated September 10, 1922, $240.60, Voucher No. 26908, dated November 19, 1923, 180.93, Voucher No. 20573, dated September 7, 1923, 174.25, Voucher No. 21640, dated September 12, 1923, 726.15, on which last named item there is a credit of $82.95, received in evidence and marked Defendants' Exhibits 1, 2, 3, 4.)

Defendants' Exhibits 1 to 4 show purchases of paint; that is not a painting job. This is supplying paint. This is merely the purchase of paint. These vouchers are indorsed on the back, repairs, works and station structures, 11th Street Station.

I do not know if any of the items in Defendants' Exhibits 1 to 4, inclusive, are embraced and covered in that part of our Exhibit No. 839 relating to the 11th Street Works. Yesterday I figured upon approximate amount for $48 for painting at the 11th Street Works. Each one of these items is a good deal more than $48. I cannot say as to whether

or not any part of any one of these items is included in the aggregate of the $48.00 items embraced in Exhibit No. 839. I have no means of knowing where this paint was used, whether it was ever used or whether the necessity of it arose on June 1st or subsequent to that date. The grand total expenditures included in the 99th Street Works, and referred to in Plaintiff's Exhibit No. 839 is $3,149.

(The following vouchers were received in evidence, and marked respectively. Defendants' Exhibit Nos. 5, 6, 7 and 8: Voucher No. 17,515, dated July 24, 1923, Voucher No. 18,857 dated Aug. 8, 1923, Voucher Nos. 20,403, dated Sept. 1, 1923, Voucher No. 21,362, dated Sept. 13, 1923, all of [fol. 2165] which call for lumber and all of which bear the notation "Charged to repairs works and station structures, 99th Street works," and the total of which amount to about $600.)

(Voucher No. 15,055, dated July 5th, 1923, received in evidence and marked Defendants' Exhibit No. 9.)

Defendants' Exhibit No. 9 calls for 11 semicircular wire screens for sidewalk openings at works, 302 East 99th Street, $161.70 and which bears on the face the endorsement "Repairs of Works and Station Structures, 99th Street Sta." If there were such screens as are there described at the works, they might be in my work. If it related to something which protected an opening in the sidewalk—not in the sidewalk but in the areaway, I would take them as part of the construction. I have not anything for repairs of the nature implied by Defendants' Exhibit No. 9 among my items at the 99th Street Works in Plaintiff's Exhibit No. 839. I have found something on this that might [fol. 2166] help to explain it. In the purifier house and oxide house at the 99th Street works, and also in the meter house I find in both these locations a semi-circular screen is called for, but they are not wire screens but are gratings. One is 9—opening and they are area gratings semi-circular in shape, but are formed of bars. Likewise in the meter house they are formed of bars, and I have not included in my estimate anything there that I can find of a semi-circular unit which has a screen. This bill plainly calls for wire screens. Apparently I have found the openings where these might belong, but I have not included in my estimate a wire

screen to cover that; so, from this rapid examination that I have made as near as I can get, I will say I did not include them originally. I have no means of knowing that this particular screen covered by Defendants' Exhibit No. 9 Voucher No. 15055 was put in some time after June 1, 1923, on any of those openings.

On Plaintiff's Exhibit No. 839 I have no estimate of repairs at the Kingsbridge holder station. That building was in such a condition that I did not think any repairs were necessary. The plant referred to on voucher No. 24861, which is dated Oct. 23, 1923 might be used on a roof or metal work. It could be used anywhere. It does not appear from this voucher. That is called roof and bridge paint and that could be called anything. It is called roof and bridge paint, that is a trade name. I use the same kind of paint for painting the bottom of my boat.

[fol. 2167] Voucher No. 18890, dated July 27, 1923, calls for the doing of roofing and sheet metal work at 621 West 46th Street, $250.00 and which likewise bears upon the back the endorsement, "Repairs of works and station structures, 44th Street station."

"Labor and material completed in scraping roof of Gove-nor House at 44th Street station and installing five-ply Barrett roof with flashing, leaders and gutters on voucher 849" is not listed in my list of repairs. The Governor house is included, however, in my appraisal, Plaintiff's Exhibit No. 838 or 838-A.

(Voucher No. 18,890 dated July 27, 1923, was received in evidence and marked Defendant's Exhibit No. 10.)

Counsel asked me to identify the building to which this refers in the 44th St., works and whether it is noted scraping roof of Gove-nor house at 44th Street. I examined that voucher and found I have no Gove-nor house noted on my list as such. It may refer to this valve house A, but it is not so noted on this voucher. I have not included any Governor houses in my appraisal of the 44th Street station under that name. There is no Barrett specification included in my estimate which this would imply as repairing 5-ply Barrett roof and there is no Barrett roof included in my valve house A at the 144th Street station.

At any rate it remains the fact I included in my appraisal the buildings at the 44th Street station, that is by whatever name they may or may not be called there.

I appraised the office building in West 57th Street, the branch office, and I included in Plaintiff's Exhibit No. 839 for the West 57th Street branch office $114 in the way of repairs.

Voucher No. 15206, dated June 20th, 1923, which calls for changing, countersereen, $270, which bears upon the back the endorsement. "Repairs of Buildings, 57th Street [fol. 2168] Branch," that item is not included in my estimate of expenditures.

(Voucher received in evidence and marked Defendant's Exhibit No. 11.)

Voucher No. 28128, dated December 8, 1923 which calls for painting ceiling, skylights, side walls, pillars and window frames in rear half of first floor at 212 West 57th Street, $529 which contains the same notation on the back, "Repairs of Buildings, 57th Street Branch," is not included in my estimate of expenditures.

(Voucher received in evidence and marked Defendant's Exhibit No. 12.)

Voucher No. 28129, paid December 12, 1923, date of material received, December 12, 1923,—refers to painting the ceilings and walls of all rooms, the second floor of the branch office at West 57th Street as well as the ceilings and walls of stairs, both ends, and basement and the amount is $590.90 and that is not included in my estimate of expenditures.

(Voucher received in evidence and marked Defendants' Exhibit No. 13.)

In that part of Plaintiff's Exhibit No. 839, in which I have enumerated the expenditures for 2084 Third Avenue, my grand total is $246.

Four authorizations, each of which appears to be numbered 228 and dated August 15, 1923, one of which calls for repainting interior of office buildings at 2084 Third Avenue, and 175 East 114th Street, $1,893, the second of which calls for Acme Sand Blasting Company cleaning

brick and stone work in front of office building at 2084 Third Avenue and 175 East 114th Street, $150; the third Richard Deeves & Sons, Inc., repairing plastering in certain portions of office buildings at 2084 Third Avenue and 175 East 114th Street, $750; and the fourth International [fol. 2169] Metal Works, replacing roofs of office buildings at 2084 Third Avenue and 175 East 114th Street, $1,118—of which there was charged to the West 57th Street office building $4,080.08, (were received in evidence, and marked respectively, Defendants' Exhibit Nos. 14 to 17, inclusive.)

On Defendants' Exhibit No. 14 considerable of the repairing, to the extent of $180, is included in my exhibit. It calls for $1,893 in the way of painting. In Defendants' Exhibit No. 16, Repairs—Patch Plaster, the item is included in my exhibit but not to such a large extent. On Defendant's Exhibit No. 15, the Acme Sandblasting Company, I have in none of my repairs included any sand blasting, for the reason that that is merely cleaning and renewing the surface or the exterior, which is not necessary to the life of the building, and I have not included anything for the roofing repairs as shown on Defendant's Exhibit No. 17.

I will have to go through my detail plumbing sheets to find out if I included, a water meter on the premises in connection with plumbing in my appraisal. I have the details with reference to Hester Street there. I have no item there for water meter. I looked at the two Hester Street office buildings for that.

Referring to the stable and garage at the 111th Street works I have not included in Plaintiff's Exhibit No. 839 anything for painting. Voucher No. 19,788, dated August 27, 1923 shows there was $500 for labor and material required to paint interior walls and roof structure of garage at 111th Street and Pleasant Avenue and it contains upon the back the endorsement, "Repairs of buildings 111th [fol. 2170] Street stable."

(Voucher 19788 received in evidence, and marked Defendant's Exhibit No. 18.)

Referring to the same stable, 111th Street I included in my estimate of expenditures nothing for repairs to the stalls in the stable except with reference to the floor. There is no notation there that suggested any repairs to the stalls.

Voucher No. 14,499 which is dated June 13, 1923, calls for $175.69, repairs to stalls 111th Street stable, and it also contains an endorsement on the back, "Repairs of building 111th Street stable," I note here that the oak is two by three and a half, and the fact that it is oak and that it is a two-by-three-and-a-half inch piece leaves me to believe that it is ordinary floor slips or slats of a horse stall, and as such might well be included in my $180 item under "Stable S." because a horse stall floor gives out, as you know, very rapidly; sometimes as often as once in six or eight months. If you get a horse that stamps a great deal, it naturally tears this floor to pieces and it would have to be replaced very often. This appears to be June 13th. It might have been prior to June 1st. My detail might enable me to identify this item included in my estimated of $180. as this particular job called for by the voucher. It is very difficult to pick that out in a quick examination. That item $180 may be some concrete floor repair and some stall repair, but I would not say that it was as much as $178 worth. I would not say that was all stall repair. I would not say that my estimate of $180 is all stall repair. Calling for oak flooring two by three-and-a-half inches thick rather led me to believe that it might constitute a part [fol. 2171] of the floor of the stall which was repaired.

Exhibit 838-A, on page 8, "Garage and stables East 111th Street station," T and G—means Tongue and groove, "Oak flooring one inch by two and a half inches you would lay an oak floor on the stalls in a stable as thick as two by three and a half inches." One inch by two and a half inches thick would be just the size of a stall slat—part of the flooring. I do not appear to have any two-inch thick stall floor material in my appraisal of stall flooring, at least, in that garage and stable listed in Exhibit 838-A.

The Stable and Garage N referred to in our Plaintiff's Exhibit No. 839 is the same building as the building which I designated in Plaintiff's Exhibit No. 838-A as "Garage and Stable." Stable portions on the southerly end of the building; garage portions on the northerly end of the building. I have referred to that building in my appraisal Exhibit No. 838-A as Street Department and Storage. It is known as building S. It is used both as a stable and a

garage. As I testified the stable is on the southerly end and the garage on the northerly end.

Referring to Plaintiff's Exhibit No. 839, and to that part of it which deals with the 111th Street Station, under the caption "Stables," where is set forth new floor, $180, that item refers to Street Department and storage. What is known as Stable and Garage N is included in Plaintiff's Exhibit No. 839 for repairs to that garage and stable, that is on the succeeding page on Plaintiff's Exhibit No. 839, which appears on the second page of that part of Plaintiff's Exhibit No. 839 which deals with the 111th Street [fol. 2172] Station. There are stalls in the southerly end of the garage and Stable N, and there are also stalls in Street Department and Storage Building 8 which corresponds to Stable S in Plaintiff's Exhibit No. 839.

In Plaintiff's Exhibit No. 839-A at the 111th Street Station is a garage designated as Garage N. There is no notation of expenditure under Garage N in Plaintiff's Exhibit No. 839. A new building would not need sand blasting. I have already testified that neither an old or a new building would need sand blasting. The only purpose of sand blasting is to clean it and renew the surface and to make it look like new. That would be on a brick building. They would not standblast a frame building, or a stone-faced building. They sand-blast brick buildings very often, especially brick that has been painted. It is done to take off the old paint.

I do not recollect any building by the name of Central Garage included anywhere in Plaintiff's Exhibit No. 839 at the 21st Street Works. I have included in Plaintiff's Exhibit No. 839, at the 21st Street Works, a garage which is designated by the letter A, at the top of the page 5 of that part of the Plaintiff's Exhibit No. 839 which deals with the 21st Street Works. It faces on Second Avenue and not First Avenue and 21st Street. Garage A is not on the corner. Garage A adjoins the corner. Garage B is on the corner. There is an elevated railroad there. The elevated railroad is on First Avenue, that is my mistake. I thought it was on the Second Avenue elevated. It is on First Avenue.

[fol. 2173] I have included in Plaintiff's Exhibit No. 839, speaking of the 21st Street works, three garages, A. B. and

C. In none of those have I included anything for cement waterproofing.

Voucher No. 14498, dated June 18, 1923 contains the information that it is for the necessary labor and material as required for cement water-proofing work at our 21st Street garage, at 21st Street and First Avenue, $570, on the back of which voucher contains the notation "Repairs of Buildings, Central Garage."

(Voucher Nos. 14498, dated June 18, 1923 and Voucher No. 14499 dated June 13, 1923, received in evidence, and marked respectively Defendants' Exhibits Nos. 19 and 20.)

My reproduction estimates have been prepared upon the basis of the cost of reproducing new the buildings and structures exactly as they were as of June 1, 1923. In other words, I used no substitutions of materials. For one or two infinitesimal items we used substitutions. In other words, the substitutions would relate to what fairly may be described as a negligible amount of material.

I saw evidences of some of these buildings included in my reproduction estimates, buildings having being added to, I saw evidence of the building being repaired from time to time. But I do not recollect any particular one that has been reconstructed. There were new items here and there in the buildings; some windows had been closed up and some had been cut through, various changes that a plant would go through in the course of its existence. But I do not recollect any particular building being reconstructed. [fols. 2174, 2175] There may have been some. The Garage A has been added to from time to time. Such evidence is shown by one portion of the building being higher, two stories in height, and another portion being one story above the grade. There were changes made in the main building itself. There was evidence of there being doors out through and various interior changes. As to each of these building at the time each one of them was built in general it was built for the purpose for which it is being used now. The majority of the buildings appear to the built for the purposes for which they are being used. I do not wish to say that all the buildings were that way, but I say the majority of the buildings are typical gas works buildings. Not necessarily are some of them, which are not in the majority, being used

now for a purpose for which they were not used at the time they were originally built. The majority and a great portion of them are bing used for the purposes for which they were intended.

My reproduction estimates, Plaintiff's Exhibits Nos. 838 and 838 A, made upon the assumption that it would be necessary to use the same quantities of materials as are there now, if such buildings and structures were reproduced as of June 1, 1923 I have not attempted to change their adequacy, or change them in any way; they are reproduced as they exist, without regard to the question of their suitability or adequacy. I do not attempt in those reproduction estimates to determine whether or not the buildings are used and useful buildings.

[fol. 2176] New York, May 28, 1924.

Met pursuant to adjournment.

JOHN VIROXD DAVIES, a witness in behalf of the plaintiff, resumed the stand:

Cross-examination by Mr. Donnelly:

I read a paper upon the subject of the construction of this tunnel before the American Society of Civil Engineers. I do not recall whether or not by looking at that paper I would be enabled to answer this particular question. It was quite a full report of the construction work and I testified on my direct examination that I received the Thomas Fitch Rowland Medal for the paper.

[fol. 2177] The character of the work in the Ravenswood Tunnel and in the Astoria Tunnel is such that the cost of construction would be greater in one than in the other. Part of the rock is of the same character but there is a great difference in variety in the rock and the depth at which the work was done was totally different. The work done in the Astoria Tunnel is quite different from the Ravenswood Tunnel. In the Astoria Tunnel the depth was greater. The rock for instance, at Long Island City, in the shaft of the Ravenswood tunnel is similar in character to the rock in the shaft at Astoria end, but the rocks differ very materially. There is a formation of limestone in

both and there is the presence of the Hudson River schist in both, but the general character of the rock is similar. Schist is a micaceous rock which has been subjected to shear, in which there is mica. It is poor rock. Dolomite rock is a crystaline limestone that is not strong, but it is fairly good rock. In constructing the Astoria tunnel we encountered some bad rock. A somewhat similar condition prevailed in constructing the Ravenswood tunnel, but as to the appearance of these decomposed and bad rocks, they were different from the Astoria.

These conditions I just described in speaking of the Ravenswood tunnel would have presented the same difficulties as were presented in meeting similar conditions in constructing the Astoria tunnel, if they had been of the same depth, but the depth being so different, that made the conditions of construction different. In the case of the Ravenswood tunnel the depth at which those conditions were met were shallower than the depth at which they were met in the Astoria tunnel, and therefore they represented difference conditions physically. As to the condi-[fol. 2178] tions that were encountered in the Ravenswood tunnel and in the Storia tunnel each were different and at different depths and you can not compare them because the difficulties were quite different difficulties. In both tunnels, referring to Plaintiff's Exhibits Nos. 836 and 837, the excavation in the tunnel was through hard rock. I am looking at item 4 of your exhibit No. 836 and 837 as scheduled and in exhibit No. 836 my item 5 as scheduled is excavation tunnel, bad ground. I have similar items, because in Exhibit No. 837 the work of excavation is divided up into the number of feet of each kind of ground and the conditions, under which those feet were carried out and done. On Exhibit No. 837 that work that is marked with a "C" means that item 5 was done under compressed air and that was rock excavation under compressed air. Item 6 was similarly material excavated with the use of a shield and compressed air and item 7 was material that was no longer rock and involved difficulties under very high air pressure.

If you will look at the foot-note, you will see that the "C" refers to the moderate pressure and "CC" to the heavy air pressure, so those are the three items. Where the work was over 47 pounds to the square inch you have

air pressure that *that* was excavated through bad ground. Moderate pressure means pressure anything above atmospheric pressure up to 30 pounds.

Referring to that paper which I *in*dentified a moment ago, and which I read before the American Society of Civil Engineers, the paper does not contain information so that the cost of reproduction could be estimated for any particular parts of the tunnel. It was deliberately done so that you could not use it for that purpose.

[fol. 2179] I do not know that I testified on my direct examination, that in my reproduction appraisal of the Astoria Tunnel I assumed that the tunnel would be produced in the same period of time as it was under original construction. What is implies is, it would be necessary to expend that amount of time to carry through that tunnel. I assumed four and a half years in its reproduction cost. That is for the Astoria Tunnel.

In making up Plaintiff's Exhibit No. 836 I assumed for dril runners in open work the wages of $1.00 an hour; an 8 hour day is the legal union day. A drill runner helper gets 70 cents an hour. Riggers are timber men, timber men, 75 cents an hour, and muckers—laborers 50 cents an hour; labor foreman, $1.00 an hour; carpenters, 70 cents; timber men's helpers, 70 cents, pipe fitters, $5.50 a day, electricians, $6.00 a day. Heading foreman, $1.00 an hour. Walking bosses varies very much in their employment and in rates they get according to their duties—about $1.00 an hour. Compressor runner, $1.25 an hour. Blacksmith, $6.50 a day.

[fol. 2180] We have not any specific list for iron workers. The amount of iron work in these jobs was comparatively small. They would get about the same as any other tradesmen. And the foreman $12.50 a day. And hoist engineer, $1.25 an hour. I have enumerated practically all the classes of work. These wages are practically or approximately the same rates as I am paying myself.

I cannot tell you how many drill runners, how many drill runner helpers, and so on down through the list, that I assumed in my reproduction estimates, because I did not reproduce them in that way. If I arrived at the estimates in that way, I would know how many of each class of labor

I would have to employ to do that work if I were physically reproducing those tunnels; but I did not arrive at them in that way. I assumed from my knowledge of what work is being let at, what those classes of construction that were in the reproduction estimate run in value. I have no means of giving you the detailed items of the make-up of gangs, because I did not arrive at the reproduction estimates in that way. My estimate was not prepared deliberately or purposely so that you could not get that. I did not assume in making up my reproduction estimates that any greater quantity of labor would be used than was used in original construction. I arrived at it largely from my own ac- [fol. 2181] quaintance with the value of these various items of work and corroborated it by studying and comparing the prices at which similar work had been let by contract in the city under conditions that were similar to these, and on public letting of public work and checking my own judgment in these by the actual figures at which work has been awarded, recently in various contracts for similar classes and types of work.

I am unable to tell you how many drill runners would be used in constructing the Astoria Tunnel, at the present time. And if I were asked the same question with reference to each of the other classes of labor that I enumerated in answer to your questions my answer would be the same.

By the Master:

I have assumed that the labor cost would be a certain amount, without having subdivided it among the classes of labor. I arrived at it from the general knowledge as to what the unit amount shown in the estimate normally costs as an aggregate amount. It is alternately based on the number of men employed and the rate at which they are employed; but I have not gone into any of that detail in arriving at this estimate, but have taken my general knowledge of what that work aggregates in cost and confirmed that by the actual letting of such contracts for similar types and characters of work. Those contracts as let do not contain a subdivision between labor and material, on the same basis as the items of units that are shown in these repro-

duction estimates. They were on the basis of per cubic yard.

By Mr. Donnelly:

It is not a fact that on Exhibit No. 836 I have assumed various unit prices for labor. For labor materials and [fol. 2182] everything that goes into these units. I assumed, just as in a bid received by the City of New York or any other public body, that the bid price is that asked for in asking for a contract to construct. When a contractor submits a bid for public work to the City of New York, or to any other municipality, for that matter when he submits a bid of blank cents per cubic yard for excavating, using that as an illustration, he usualy has in mind the number of pairs of hands that are involved in that unit price that he gives. He knows what quantity of labor he is going to require for the purpose of performing the work for which he is making the bid. He usually knows it by the result of his experience in other work and previous work, and guided by similar work that has been done elsewhere.

I am using a dozen or so drill runners now on that open tunnel work over in Jersey that I spoke about. The conditions comparable there are not with the construction of the Astoria Tunnel.

By the Master:

I did not figure it at all by making any assumption as to whether the number of men of the different classes of labor employed would be the same as were originally employed by me in that work; it did not have any relation to the original doing of the work. I took it as a value for each unit to reproduce a complete job—as a complete, finished job.

By Mr. Donnelly:

I based these rates of wages on the bids of the Queensboro subway from the Grand Central to Seventh Avenue, let November 9, 1921; the Hudson River Vehicular Tunnel, contracts number 3 and number 4, let February 16, 1922; Robins Reef Outfall Pressure Tunnel, awarded April 18,

1922; borings for the Narrows Tunnel, let April 21, 1922; the Great Notch Tunnel in New Jersey, October 19, 1922, [fol. 2183] subway route 52, section 3, Flushing, October 26, 1922; the Brooklyn shaft of the Narrows Tunnel, awarded November 24, 1922; subway Fourth Avenue, Brooklyn, 87th Street to 95th Street, awarded December 22, 1922; the subway Bushwick Avenue, Brooklyn, awarded December 22, 1922; the shaft of the Staten Island Narrows Tunnel, of May 18, 1923; and the subway Nassau Street, New York, of May 22, 1923. I used the prices occurring in those and the bids occurring in those contracts on public letting and public work as supporting the figures I assumed in my judgment as proper figures *I assumed in my judgment as proper figures* for these items. The bids as I used them were reduced to the low bid of each of those contracts. The figures I assumed were checked by the low bids on each of the items or different items going into those various contracts. It is a fact, speaking of each and every one of those bids, that those bids that were offered to the City or to the public authorities, as the case may be, *as the case may be*, included certain percentages for contractor's profits and that there are the contractors' risks. There ought to be 20 per cent in the bids for contractors' profits.

Taking, purely for the purpose of illustration, which will be typical of any of the items included in Exhibit 836 when I give a unit price of $43 per cubic yard for Item No. 4, as scheduled on Exhibit 836, that unit price of $43 a cubic yard includes a certain percentage of 20 per cent for contractor's profit and the contractors' hazards.

By the Master:

I think the contractor would expect to get out of hazardous work of this sort a net profit of approximately 20 per cent. What the profit ultimately is is a very questionable thing and very frequently there isn't a profit.

[fol. 2184] By Mr. Donnelly:

There was no compressed air used on the Astoria Tunnel, it was below the depth at which any compressed air could possibly be used. The fact that there was no com-

pressed air used on the Astoria Tunnel would not have a very decided bearing upon the amount of hazard encountered there. The depth is even more serious because if it is a depth at which compressed air can be worked, you know that you can get through somehow or other; but the hazards are very grave in a case like the Astoria Tunnel, where the depth was such at which no other recourse to construction can be done or carried out excepting the methods similar to that we actually did. In the Astoria Tunnel there is the serious hazard of influx of water that would drown the employes doing the work. That was not included in my 20 per cent; that is what represents what should be a normal contractor's profit.

By the Master:

By the expression contractor's hazard, I mean: in addition to what he would anticipate to get out of the contractor's profit he has got to figure in his unit prices a certain amount and allowance that would represent such hazards as he considered there were involved in the ability to carry out the work at all—the risk; and that would involve the consideration in his unit prices of a figure that would be a higher figure than if there was absolutely no risk at all attached to it. I mean hazards other than anticipated in the profit, or not limited to hazard involving loss of life at all.

By Mr. Donnelly:

I made no assumption as to what would be the cost of the accidents in doing this work in relation to the pay roll. That is usually taken care of by an insurance policy.

[fol. 2185] What I stated as twenty per cent would represent out of the entire construction the contractor for his entering into the contract and for his execution of that contract would be entitled undoubtedly to a twenty per cent profit on a hazardous job like that, outside of all costs. That is a normal and usual practice. He figures every possible contingency that he contemplates is likely to enter into the work and then puts on top of it what he considers a fair and reasonable profit accruing.

[fol. 2186] One of the bids that I gave you a little while back, was a bid for the vehicular tunnel. Those were used

so far as they were applicable. That was practically a compressed air job, and the work there is comparable with the work in the Ravenswood Tunnel, but not with the Astoria Tunnel, although there are some items that are comparable, speaking now of my Exhibit 836. Excavation was done in the Vehicular Tunnel that was not done under air pressure, some of it. The shaft concrete was done in open and shaft excavation was done in open partly. Cast steel lining was furnished and is similar and applicable; and bolts for lining, and some of the smaller items there was a comparison between. The prices in the bids which are comparable: In Item 1, for instance, excavation shaft earth, the bid on Contract No. 2, Vehicular Tunnel, was $24.10. There were various items in that Contract No. 2, which averaged $27.75, and applying the index, bringing the rates from the date at which those were awarded to the date of June, 1923, the figure worked out to an equated amount of $24.10. In the Vehicular Tunnel Contract No. 4, there was a similar item quoted at $20.05. In Item No. 2, excavation of earth below sea level, Contract No. 2, Vehicular Tunnel, had various items averaging $40.20, on which we assumed the equation as $34.90. Contract No. 3, similarly equated to an amount of $31.20. Contract No. 4, to $33.90, as average items, on which we averaged the amount as $27.90. [fol. 2187] The items which make up that equated figure are Item No. 1 and Item No. 2, on which our figures were $20.90, whereas the average of those contracts that we compare for the Brooklyn and Staten Island shafts of the Narrows Tunnel and the shafts of the Vehicular Tunnel averaged $31.18 per yard. On Item No. 1, our figure is $20.70, and the average of those different similar contracts aggregated an average of $22.80 for shaft excavation. That is not compressed air work; that is above sea level. In this list of contracts which I have given, and which I used for the purpose of checking or comparing to support the unit prices that I have given in my estimates Exhibits 836 and 837, I found in some or all of them comparable items to the ones that I have set forth here. The figures are comparable under the conditions in which the work is done; that is, the majority of the work on the Vehicular Tunnel unquestionable is compressed air work, but these particular figures that I used were for open work, where it is open work, and

do not relate to that part which was under compressed air, and similar in character to the one that we have done.

By the Master:

These bids are made as of June, 1923. In order to bring them to a common basis of labor rates and material prices which have varied tremendously since 1916, or in 1915, say, there have had to be used by every engineer and every contractor index equations or coefficients for variation month by month, which have been published largely in the Engineering News Record, and which we checked by our own experience and practically correct, reduced from current labor rates and current prices of materials entering into all construction work, and those factors or equations are used in order to bring a price from the date of letting of an [fol. 2188] award to the date at which this work was done, so that when I say an equated price, I mean I have taken the price at which the work was let at a date prior to June 1, 1923, and reduced it or increased it to the prices prevailing as of June 1, 1923. In most of the cases where work was let in 1922, that was the peak of the rate, and it fell off somewhat in 1923, so that it was somewhat lower in 1923 than it was in 1922. Item No. 3, the contract No. 3, for shaft excavation in rock is $59.60. Contract No. 4, $33.90; the Narrows Staten Island Shaft $41.50; which makes an average of those items of $45. Our figure was taken as $40.50. I have given the equated figures, of those received from the various bidders.

By Mr. Donnelly:

Those figures I do not think were in compressed air. I can not be quite sure, but I do not believe so. Mr. Snow will probably know.

Other items of comparable prices are: The excavation of the rock in the Astoria Tunnel is comparable with the excavation of rock from the Hudson Siphon of the Catskill Water Supply, which was awarded to Gillespie at a price of $17.50 per cubic yard for excavation in 1911. Now, that, equated with the factors, makes that figure as of June, 1923, the equivalent of $42.91. We have assumed that similar excavation $43, and that was for excavation in the open of that rock in the Catskill Water Supply Tunnel at Storm

King. That is only to check our figures by something that [fol. 2189] has been let of a similar character elsewhere. There has not been any tunnel constructed around the City of New York in recent years that is exactly similar in character to the Astoria Tunnel. The Catskill Storm King Tunnel was the nearest thing to it; it had similar conditions of deep level and pumping. The level in the Catskill Aqueduct Tunnel construction was several hundreds of feet; very much deeper than the Astoria Tunnel. Among engineers the depth may or may not present a particular drawback. If you are down deep enough to get down to where the rock fissures do not extend, then it may be simpler to do than it is at a depth where the rock fissures are open to the water above, so that you have got to take each case on its own bottom. The important consideration is the presence or absence of these fissures.

Other bid prices comparable with my estimates are:

Item 6, Concrete in the shaft, various items of the Vehicular Tunnel contracts, averaging $23 on different quotations and equating that similarly brings the figure to $19.95. On Contract No. 3, similarly the figures received averaged $32.20 when equated. The Brooklyn Shaft of the Narrows Tunnel, $18.05. The Staten Island Shaft of the Narrows Tunnel, $26.75; or an average as equated; and the Hudson Siphon Contracts equated, averaged $29.43. The average of all of those becomes $26.43. The figure we have used is [fol. 2190] $23.40. Concrete in tunnel, Item No. 7, comparing the figures quoted on the Hudson Siphon as of 1911 and equated, brings it to an equated figure of $31.88. Our figure used is $32. Stone packing, Item 9, the Vehicular Tunnel Contracts, Contract No. 3, equated is $4.37; Passaic Valley Sewerage Tunnel, equated to $8.22; and the Great Notch Tunnel, $6.08; or an average of those items of $6.22. The figure we have used is $4.50. Item No. 10, the Narrows Tunnel, Brooklyn Shaft, $7.69 as equated; and Staten Island Shaft, equated to $5.60; or an average of $6.65. The price we have used is $6.30. Item 11, the Vehicular Tunnel, Contract No. 3, for grouting at low pressure, figure of $7.47 equated. Contract No. 4, $6.78 equated; and Great Notch Tunnel, $13.05; making an average of those jobs

of $9.10 for normal air pressure. I find those figures I have just testified on Item 11 were not used, but a similar comparison was made with the grouting on the Hudson Siphon Tunnel, in which the price then in 1911 was $7.57, and equated becomes $18.60 a barrel, and the figure we have used is $18. In Item 12, grouting under high pressure, as compared with the Catskill-Storm King Tunnel, in which the equated price is $42.57; that is, for labor and materials in grouting; and price used is $43. Item 13, we have nothing to compare it with and our estimate and our judgment was that the fair price for cast steel lining was $144 a ton. [fol. 2191] Item 14, the averages of the Vehicular Tunnel iron lining, and the Old Slip-White-hall and the 14th Street East River prices produced an average figure as equated at $96.05; but, as the quantity in this case is very small, it necessitated special patterns for a small quantity, and 25 per cent was considered would be a fair figure above that, which would make a comparative figure of $120.06, and the price we have used is $108. Bolts for lining, the average figures of the Vehicular Tunnel Contracts $225; we have used the figure of $202.50. Steel sheet piling, the Narrow Siphon figures average $63.17, and that reduced to the price as of this date, would represent $156. We have used a price of $140.40. That item is No. 16. Item No. 17, structural steel, various figures received in bids of Queensborough Extension Subway, Vehicular Tunnel contracts, Flushing Subway, the Fourth Avenue Brooklyn Subway, Bushwick Avenue, and Nassau Street Subways, average $123.62. The figure we have used is $111.60. Iron castings, we have assumed a price of $144. Timbering, the bid on the Nassau Street Subway, $187. We have used the figure of $168.30.

In giving the items, I think I was down to the last. I got to the 19th. Item 20, the work was done under extremely difficult conditions of water and the test holes drilled were estimated at a figure of $20 per linear foot. Some similar [fol. 2192] work was done on the Hudson River Siphon which, in May, 1911, was $10 per linear foot, and that equated an amount of $24.50, which we estimated at $20. On Item 21, on the Hudson Siphon, the item for pumping plant was $170,000, based on a provision for pumping 600

thousand million gallon feet and for the Astoria, which was 324 thousand gallon feet and equating that at the amount figured for $92,000 at the Storm King Siphon for 1911, which equating would have produced a figure of $225,000, and that figure we have included there as the pumping plant. The item of 22 for pumping, the contractor was paid 30 cents per million gallon feet, which equated was equavalent to 74 cents, a figure which we estimated at 75 cents per million gallon feet. The other two items are judgment as to what was necessary to do in that case. That finishes Plaintiff's No. 836.

In order to arrive at the units given by me on Plaintiff's Exhibit No. 837, which has to do with the Ravenswood Tunnel, we have used figures which we considered reasonable and proper for each of those items. We compared them for the purpose of comparison with figures in the same manner as I have already specified. The same line of contracts were used for the purpose of comparison, whenever they were applicable. In equating these figures, the factors used were the factors that appear in the Engineering News Record of January 3, 1924, No. 1, Volume 92, which [fol. 2193] give on pages 42 and 43 the full analysis of the way in which those cost index numbers are arrived at, from 1914 up to the end of 1923. The method that I used was that of multiplying by the index figure according to the year and period at which the original letting was made for that purpose. The figure would be the same for each of these bids I gave this morning, according to the year in which the bids were received. Take for instance, on the first item on Plaintiff's Exhibit No. 836, where the unit price is $20.70 per cubic yard, in that particular item the index for 1923 was 220.7 with respect to the index for the date of the letting of those bids represented 255.20, so there was a reduction in that case similarly all the way through, using the different figures for the different dates. In some cases it showed an increase and in some cases a decrease. My unit price of $20.70 per cubic yard for the item designated as No. 1 on Plaintiff's Exhibit No. 836, is made up of from four different items. Item 7, concrete tunnels, sound ground there is only one comparison that is checked, and that is a concrete awarded the Hudson Siphon, which was $13 in 1911, as a comparison. The En-

gineering News gave me the information for prices from 1914. I got my multipl-er that I adopted in equating from our own experience. There was very little variation. The variation was a fluctuation up and down between 1911 and [fol. 2194] 1914. There was no appreciable change in those particular years prior to the war. Between 1911 and 1914 the range of prices did not present any differences there that precluded my taking 1914 as the starting poin*g*. For making up Plaintiff's Exhibit No. 836, and Plaintiff's Exhibit No. 837, I did not equate in the same manner the prices that were used on the original construction. I did not take those into consideration at all. That method of equating could undoubtedly be done in the same manner. By original construction I mean when the tunnels were originally built, the prices of labor and material as they were incurred then. The figures that I use for checking, or for whatever purpose I did use them, was for work done by other people than myself or my own firm, but in arriving at my judgment I used our general experience. I used the same contracts wherever units were similar or applicable in equating on Plaintiff's Exhibit No. 837, which is the Ravenswood Tunnel exhibit, as I did in equating the unit prices contained on Plaintiff's Exhibit No. 836. I think we began the Ravenswood Tunnel in 1892 and finished it about 1895. We have nothing to do with 1892. The estimate is made as of June 1923, as if you were reproducing the structure that exists there. All of those contracts used in comparison were awarded in 1921 and 1922. They did not go back to the earlier bids. We only equated fo*r*m the time of the contracts to June 1, 1923. I did not mean to give the impression that, in equating, I could apply those bids to work done prior to 1914. I only used the [fol. 2195] Hudson Siphon as one representative contract which the City of New York had carried out, where there were somewhat similar conditions involved and that is the only one that went behind the 1921 figures, and that *w*e because it was peculiarly situated. There was no equating behind the 1921 figures, and that was because it was peculiarly situated. There was no other equating at all except a connection with this more recently awarded contract. Some of the bids at least that I equated, according to my method of equating in making up Plaintiff's Exhibit No.

836, could be used for the same purpose in making up Plaintiff's Exhibit No. 837. They are used in the same way. There are certain items in those bids which are comparable. I can go over the whole matter for the Ravenswood Tunnel the same way as for the Astoria Tunnel. In making up the Ravenswood Tunnel exhibit, there are only some of the items in my Ravenswood Tunnel estimate which would be comparable with some of the bids, and those sums, whatever that number may be, are not the same items as I have set forth in Plaintiff's Exhibit No. 836, because the works were quite different on the Ravenswood Tunnel. That was a compressed air tunnel but the work which could be carried out under compressed air safely and securely. The other one was beyond the range of any possibility of doing under air pressure. As I understand your question, it is that I equated these figures for the purpose of comparison. On the Ravenswood ex- [fol. 2196] hibit, which is Exhibit 837, Item No. 1, I drew the comparison with the Vehicular Contract No. 4, with the Brooklyn Shaft Contract in the Narrows Tunnel, indicating an average price per cubic yards for those works $22.37. The figure I used is $20.70. The equated figure on the Vehicular Contract No. 4 is $20.05. On the Brooklyn Narrows Shaft it is $16.30. The various bids were $7.00, $31.40, $7.50 and $15.33; the average of that being $15.33 which, equated, produces a figure of $20.05. The units on the Narrows Tunnel Shaft was $20, $7, $15—and average $14, or adjusted to the period of June, 1923, $16.30, which was the comparative figure I used. The Staten Island Shaft, the units were $40, $20.35, or an average of $30.18, or equated to $30.75. Now, Item No. 2, the items are $39 and $42.45, an indiv-*u*dal bids, an average of $40.72, with an adjustment to date to $41.50, and the figure we use is $37.80. The same figure in comparison, which occurs in Item No. 3, in which we have used the unit of $37.80—the same. Item No. 4, the unit bid prices were $21, $21, $26, $15.50, $29.50, $18, $18.21, $15.50 and $29.50, and the average of all of those is $20.50, equated to June, 1923, at $23.90. The figure we use is $22.50. Item No. 5, the units of bids were $70, $32, $52, an average of $51.33, which equated makes a figure of $67.20 and the other contract, $49.40, $32 and $80, and an average of $53.50 and equated to

$70.50. The mean of those two is $68.85 and the figure we have used is $62.10. That is for Items 5 and 6. Item 7, the unit prices bid were $42, $34.20, and $52, and average [fol. 2197] of $42.73 equated becomes $56. The other set of figures, $47, $34.20 and $70, an average of those bids, $50.40, equated, become $66, or an average of all the set of $61, those being for ordinary air, but the cost of the exceptional conditions of air pressure in this item and the small quantity of it necessitated a raise in that figure above those prices, and the figure we have used is $82.80. There was exceptional air pressure used in that that had very seldom been exceeded for a short time, or ever. Those prices that I gave before I gave the equated figure for that item that we are just discussing, covered the work in the Vehicular Tunnel under air pressure. This is air pressure work that I am speaking of. In Item 5, $62.10, that work was done under pressures of under 30, or approximately 30 pounds, 30 to 35 pounds. The other portion was done under pressures exceeding 40 pounds. Item No. 7 was under pressures of over 40 pounds. Concrete, Item No. 8, the Queensborough Subway figures were $19, $17.50, $15.52, an average of $17.34, which equated, becomes $23 as a unit. The prices in the Vehicular Tunnel were $21, $14.50 and $19, an average of $18.17 or equated was $23.80. The Queensborough Tunnel job was done in November 1921. The units in the Great Notch Tunnel, $12, $9, $15, $17, $17.30, $14.06. $14.06 is the average. Equating that to the time becomes $16.40. The Rapid Transit Subway Extension of Section 3, Route 52, the units were $14.75, $14.44, $17, an average of $15.39, equated becomes $18.05. The [fol. 2198] same average comes from three bids on the Brooklyn Shaft of the Narrows Tunnel, $18.05 as an average. The Brooklyn Subway along Fourth Avenue from 87th Street to 95th Street, the unit bids were $14.32, $13.35, $18.50, an average of $15.39, and adjusted for time to $17.70. On the Rapid Transit work, Bushwick Avenue, the unit prices were $15, $15, $17.40, and $28, an average of $18.85. Adjusted, that becomes $21.63. The units on the Staten Island Shaft, the Narrows Tunnel are $12, $31.20, $21.60, $21.60 the average, adjusted to $22, as the prices of June, 1923; and for Rapid Transit, Section 2, Route 45, the units are $19, $24.75 and $35, an average of $26.25. Adjusted, be-

comes $26.75. The average of all of those is $21.07, and the figure we have used is $14.40. Item No. 9, the unit figures for work in compressed air, $30, $36.25 and $25, an average price of $30.42, or equated, becomes $39.70. Units of $25, $40, and $25, an average of $30, and equated, becomes $39.30. The Jersey City Pressure Tunnel of the Passaic Valley Sewerage Commission, the units bid were $20, $27.50, $30 and $25, an average of $25.62, and equated becomes $34.40. That is 1922. I stated those dates earlier. I did all of them. Bids on concrete in compressed air, the Narrows Tunnel, $20, $25, $30, the average $25, and equated to June 23, becomes $29.10. For the Staten Island shaft of the pressure tunnel, units of $18.50, $34, average of $26.25 and, equated, becomes $26.70. The average of all [fol. 2199] of those is $33.92 from which deducting form work of $8.48 becomes $25.44, for which we have used a price of $22.50. Stone packing, the only figure that is comparable is in the Newark Tunnel, $6.08, which we have estimated as $5.40. That is in normal air. Stone packing under compressed air, the Vehicular Tunnel contract has an average of prices quoted of $3.30 and equating becomes $4.37. In the Jersey City Pressure Tunnel the similar item, the bids were $6, $3.50, $5.00 and $10, an average of $6.12. Equating becomes $8.22. The price we have used is $7.20. Brick work, Item 12, on the Great Notch Tunnel, the units bid were $35, $35, $50, $25.25, $30, the average being $35.05, or, equated becomes $41. Rapid Transit Subway Flushing, the units bid were $34, $35, $30, $33, an average of $38.75 when equated. Subway in Brooklyn, the units bid $30, $30, $38, average of $32.67, adjusted and equated to $37.60. The Bushwick Avenue Rapid Transit Subway, the unit prices bid were $35, $37, $30, $30, an average of $33. Equated, becomes $37.90. Nassau Street Subway, the units are $34, $40, $60, an average of $44.67; equated, $45.50, making an average of all of those prices stated of $41.11. The figure we have used is $36.90. Cast iron in Items 13, 14, 15, we have estimated at $124.20. The averages of the Whitehall Street Tunnels amounted, equated to about $126.80, but this iron is very light, very small in size, and therefore per ton costs a great deal more than any of the subways around the city on account of its [fol. 2200] lighter weight and smaller size. The date of

that Whitehall Street job is 1914. The price quotations on the vehicular tunnels for the very large quantities of very heavy metal they used ran about $26.20. Item 16, for cast iron under heavy pressure, the metal is the same figure as before for the price but the additional labor cost owing to the higher pressure increases that item to $133.20. Items 17 and 18 we have estimated on $169.20. There are no figures that are quite comparable on account of the smaller sizes of the bolts in this tunnel from any of the subway figures or bids which run somewhat lower in price but are less expensive on account of their weight. Item 20 is the same unit price for the bolts but a high labor cost in putting them in on account of air pressure. Item 21, unit prices are given in the vehicular tunnel bids of $7.50, $4.10, $5.50, average of $5.70 and equated to $7.47. Contract No. 4 Vehicular Tunnel, the units bid are $7.50, $3.55, $4.50, average of $5.18, equated to $6.78. The Great Notch Tunnel, the units on the same item, $9, $6, $12, $11.80, $17, an average of $11.16, and equated becomes $13.05. On the Flushing subway units bid $6, $6, $6, $6, all bids are the same, equated to $7.05. On the Brooklyn shaft of the Narrows Tunnel the units are $7.80, $6, and $6, an average of $6.60; equated, $7.69. On the Fourth Avenue extension Brooklyn subway the units are $6 throughout; equated, $6.90. Three bids all at the same price. On the Bush-[fol. 2201] wick Avenue subway units bid were $7, $5, $5, $6, average of $5.75, equated $7.75. On the Staten Island shaft the units are $6, $5, an average of $5.70, equated $5.60. On the Nassau Street section 2, route 45 subway, the units are $6, $8, $9, an average of $7.67, and equated becomes $7.72. The average of all of those stated is $7.78. We have used a figure of $7.20. Item No. 22, Units from Vehicular Tunnel Contract No. 3, were $9.50, $6.55, $5.75, average of $7.27; equated, becomes $9.53. The same figures apply on Contract No. 4, also. Unit figures on the grouting under pressure, the Brooklyn shaft of the Narrows Tunnel, $9.80, $9, and $9, an average of $9.27, equated, $10.75. The Staten Island shaft of the Narrows Tunnel, units of $7.35, $8, and $8, average of $7.68, and equated, becomes $7.83. The average of all of those is $9.41. The figure we have used is $9. The next two items are our judgment as to what the cost of those drill holes, large size drill holes

would be and there are no comparisons. That completes the schedule.

The figures which I have used, and as to which I have just testified, for the purpose of making comparisons, include some allowance for plant. I have included in Exhibit 837, item No. 28, allowance for plant $108,000, because the air pressure work in that tunnel was of a very small extent, comparatively. For the air pressure work an extremely expensive plant has to be installed that is not applicable [fol. 2202] particularly for anything but the air pressure portion of the work, and therefore the burden would be an excessive one upon all other items unless a portion of the plant to the account and not distributed specially on to the account and not distributed over the contracts. We therefore allowed 50 per cent of the plant account to go into a special account as extra allowance for a special plant needed for only a very small portion comparatively of the work itself, the balance of the plant being that necessary for the ordinary, normal, rock tunnel portion of the work. I covered in my specific items all the balance of the plant and that includes an allowance for plant also, all other items carry the normal plant with them. My allowance of $108,000 for plant, Item No. 21, is a figure that represents an additional amount over and above that which I have included as allowance for plant in my unit prices. The other contracts were so large as to carry the whole plant with them easily because the extent of the work was greater. In this case there was a very small amount of work. The normal plant for the balance of the work was distributed over the items that are included, but this is a special plant that is in addition to the former plant.

With reference to Plaintiff's Exhibit 836, I stated that the cost of concrete in tunnel, bad ground, Item No. 8, is $36, or $4 more than in sound ground, Item No. 7. The difference in cost between those two items arrived at is a [fol. 2203] matter of judgment as to the increased cost of labor in putting that in in wet, bad conditions. The difference between the two items, 7 and 8, is to be accounted for principally by the difference in the cost of labor. One would be more expensive than the other. The same class of labor would be used in one as compared with the other, but they would work a little bit slower in the bad ground

than they would in the sound ground. The element of time would create the added expense because it adds to the labor cost. Still on Exhibit 836, speaking of Item No. 4, $43 a cubic yard for excavation in rock, and the same item in Exhibit No. 837, $22.50 per cubic yard, excavation in tunnel, rock. There is that difference because the conditions under which the work is done are quite different. These represent the bid that would be made by a contractor on these two pieces of work. The hazard of the lower price rock is a very small hazard because you are absolutely certain of being able to carry the work out and complete the work fully, because the work is within the possibilities of putting air pressure on if necessary, and it represents the risks and hazards of all the conditions that may be met, which are very small in the case of the sound rock in the shallow tunnel, whereas those hazards and risks are very great in the very deep tunnel where the pressures are great and where there may be caves and water finding access at any time, and with the possibility of getting large [fol. 2204] volumes of water under very high pressure in the deep tunnel, so the increased price is warranted in awarding a contract on account of the risk and hazard of producing the finished work.

The Ravenswood Tunnel is nowhere deeper than 100 feet below sea level as compared to 280 feet on the Astoria Tunnel. Speaking of the Astoria Tunnel, Plaintiff's Exhibit 836, I testified on my direct examination, that my appraisals were made up with full knowledge of the conditions to be encountered. I will say in view of that testimony that my unit price of $43 a cubic yard for Item No. 4 is a fair and reasonable price as compared with the $22.50 unit on the same item on Exhibit 837, figuring that this is a contract being awarded and let, the contrator has the risks of caves and water breaking through that rock and through fissures in the rock, even though we know the conditions that do exist. The rock in both tunnels was not hard rock, a good deal of it was not hard rock. It is rock that is very liable to yield to great quantities of water and very liable to cave at times. My units could not be the same for both tunnels, because of the difference in the depth and the reduced hazard in the shallow depth where under the very worst conditions air pressure could be in-

stalled to carry through the work successfully. In the other case it would not be possible. Then the hazard of meeting the conditions would be extremely great in the [fol. 2205] deeper tunnel. In the case of the Astoria tunnel, there would be that danger of the water coming in, which condition does not exist in the Ravenswood Tunnel, to the same degree, the pressure being so much less. I have taken care of the pumping on Exhibit 836 in Item No. 22 and that is over and above what my figure for Item No. 4 comes to. That is how the Catskill Siphon was awarded, a unit price for rock, and the pumpage in addition. That is usually the case because of the uncertainties of the quantity of pumpage. My unit of $43 per cubic yard for Item No. 4 does not take care of any of the pumping necessary, but it takes care of the risks of losing your tunnel, or getting demoralized conditions that would be extremely burdensome and hazardous on the contractor. As a matter of fact in original construction that was the difficulty that did arise, but we overcome that by grouting. I also have in Exhibit 836 an item for grounting. The difference between Items 8 of the Ravenswood Exhibit, $14.40 and Item 7, $32, for concrete in tunnel is due to exactly the same reasons as I have described, on account of the depth and the hazardous condition of carrying out the work of a contract under those deeper conditions. The same explanation gives the reason for the difference between Item 22 on the Ravenswood Exhibit, $9, and Item 11 of the Astoria Exhibit, $18, both of them relating to grout. The hazard that existed in the one case as compared with less hazard in the other. On page 66 of my paper on the Astoria Tunnel I state, that I discharged [fol. 2206] 4,500 bags of cement at pressures varying from 350 to 500 pounds in 25 hours. Figuring four bags of cement to the barrel that would be 1,125 barrels. At $43 per barrel, the unit price given by me for Item 12 in Exhibit 837, the cost of the grout would be $48,375. I did not figure the cement used for grouting on June 1, 1923 at the price per barrel. It is likely that there was a month's work involved in that grouping operation before the actual putting in of that cement took place, all of which comes within the scope of that unit. Possibly on June 1, 1923, it was selling at a price per barrel of say $2.70.

Assuming that to be so, for 1125 barrels of grout for material alone would come to a cost of approximately $3,000. Then the balance of about $46,000 would in that case represent labor alone for one particular grouting. But there were months and months there where we could not get a single bag in during the day. I don't know if there was any day during the construction of the Astoria tunnel when our payroll would have reached a figure of $46,000 as the cost of labor in June, 1923. I am not able to say whether or not our payroll for any one day exceeded $3,000. I have no figure in mind at all in either one of these reproduction estimates, Exhibits 836 and 837, of what our daily or weekly payroll would be. I state on pages 644 and 645 of my paper that from November 10th to November 17th, I injected through one tube 11,342 bags [fol. 2207] of cement or 2,835 barrels, and the unit price of $43 per barrel used by me under item 12 of Exhibit 836, the reproduction cost of this grout would be accordingly 43 times 2,836 barrels or $122,000. If we take a price of $2.75 per barrel for the cement, the charge for material alone in those 2,835 barrels of cement used for grout would be the product, or $7,654.50. Then the difference between $122,000 and $7,654.50, or $114,000 would represent the value of labor alone during the week November 10th to November 17, 1914, on one grout hole alone. I have no recollection of any week during the construction of the Astoria Tunnel when my payroll amounted to as much as $100,000, but when you come to grouting you go on for months and months often and do not get in one barrel a day with the entire gang, because the fissures won't receive the grout, and you keep on pumping and pumping with no grout in for months, and then you strike a fissure that will take it and it will take it in quantities, so that all of those things have to average up in a whole piece of work. You can't assign one day or one week of a special condition to represent the value of the work as a whole. I have given the cost of pumping plant, Item 1, Exhibit 836 as $225,000. There is no allowance made for salvage value in that price. The salvage on that kind of stuff is not very much. I don't know what the cost was of the pumping plan- actually used, but it is what is represented by a pumping plant that was necessary to meet the quantity of water as between June [fol. 2208] 1, 1923 and when the job was done. The esti-

mate that I have given of $225,000 covers my judgment of the cost of the pumping plant as of June, 1923. I got that figure of $225,000 from general knowledge as to the amount of plant boilers and plant that would be necessary for meeting with that condition. I assumed I would buy it first hand. It might be resold in its old second hand condition if a buyer could be found. A contractor does not often figure anything for salvage because it is doubtful what he gets for it. He frequently gets practically nothing for his salvage. It all depends on the circumstances and conditions. The contractor seldom figures on the salvage of his plant. I am speaking as a general proposition. I am speaking also with reference to those bids that I gave this morning and this afternoon as a general proposition. My estimate of $225,000 for pumping plant is based on the experience of what it is likely to involve to pump that amount of water, and plant that was paid for and allowed for and paid for in the Catskill Siphon, as what they had in their estimate and paid for by the City. I don't know if that plant that was used in the Catskill Siphon, would be comparable with this plant here. I don't know the plant that was on the Siphon, personally. A pumping plant is a pumping plant. I would use the same kind of pumping plant for that kind of job as I would for this kind of job, [fol. 2209] the same general type undoubtedly. Item No. 22, my estimate for the cost of pumping is $243,000 and that represents the total cost of all the pumping done on work. It represents the general pumpage of that period. The next particular items 3, 4, 5, 6 and 7 and 8 and 20 do not include any allowance for the cost of pumping. If I had to physically reproduce this plant with my present knowledge, I would adopt the same methods as were indicated by me as adopted when the tunnel was constructed, and that would apply to both tunnels.

By the Master:

My estimate of the quantity and materials used in the reproduction of these tunnels was based on the quantity of material used or removed or otherwise used in the original tunnels, and this is the reproduction of the existing structures. In my Exhibit No. 836, there is a separation of the pumping plant and that plant is distributable over

every item and included in every item, and that is the same as the Ravenswood Tunnel, and it contemplated substantially the same plant and equipment that was used originally.

[fol. 2210] New York, May 29, 1924.

Met pursuant to adjournment.

J. Vipond Davies, a witness in behalf of the plaintiff, resumed the stand.

Cross-examination continued by Mr. Donnelly.

(Paper entitled "The Tunnel under the East River," prepared by Mr. J. Vipond Davies and read before the American Society of Civil Engineers at a meeting on February 6, 1915, known as Paper No. 1369 of the Transactions of the American Society of Civil Engineers, at pages 594 to 674, and offered by counsel for the defendant Attorney General, was received in evidence as to the portion embracing pages 600 to 674 and the map opposite page 598, and was marked Defendant's Exhibit No. 21.)

By the Master: But it is the testimony of Mr. Davies. It does not contradict what he has said. It would be part of his testimony.

(Note.—The paper above referred to, Defendant's Exhibit No. 21, related to the construction of the Astoria tunnel, the construction involved consisting of a vertical shaft, 277 feet deep, on the property of the Astoria Light, Heat and Power Company, at Astoria, a vertical shaft 242 feet deep, on private property in the Bronx, and a tunnel connecting these shafts, with provision of two 72-inch cast [fol. 2211] iron mains from Astoria to the Bronx.)

The subtopics of the portion of the paper which was omitted, were as follows:

"2. Construction."
"3. Plant."
"Astoria Plant."
"Bronx Plant."
"Tunnel Equipment."

"4. Shaft sinking."
"Shaft sinking in earth."
"Shaft sinking in rock."
"5. Tunnel driving under normal conditions."
"6. Tunneling under adverse conditions through decomposed water-bearing dolomite."
"7. Flooding of tunnel."
"8. Recovery of tunnel."
"9. Steel lining."
"10. Drainage."
"11. Ventilation."
"12. Lighting."
"13. Triangulation and Alignment."
"14. Quantities and Costs."

The paper read, in part, as follows:

* * * * * * *

[fol. 2212] "14. Quantities and Costs

Table 7 is a summation of the quantities incidental to the shaft and tunnel construction.

Table 7—Summation of Quantities

Earth excavation, for erecting plant	1,750	cu. yd.
Earth excavation, shafts	3,050	"
Earth excavation, total	4,800	"
Rock excavation, shafts	17,480	"
Rock excavation, tunnel	70,140	"
Rock excavation, total	87,620	"
Concrete removal, tunnel	4,080	"
Grout bank removal, tunnel	1,150	"
Summary of excavation—earth, rock, concrete, etc.	97,650	"
Concrete, plant foundations	1,160	"
Concrete, shaft lining	5,070	"
Concrete, tunnel	26,860	"
Concrete, tunnel bulkheads	2,070	"
Concrete, pipe foundations	710	"
Summary of concrete placed	35,870	"

Lining rings, 20 cast-iron, 50 lin. ft.	227½	tons*
Lining rings, 200 cast-steel, 400 lin. ft.	1,365	"
Lining rings, total, 220 rings, 450 lin. ft.	1,592½	"
Cement, concrete plant foundations	6,870	bags
Cement, concrete lining, shafts and tunnel	199,000	"
Cement, concrete bulkheads	16,160	"
Cement, concrete pipe foundations	4,590	"
Cement, total in concrete	226,620	"
Cement, grouted in shaft lining	1,200	"
Cement, grouted in tunnel concrete lining	45,340	"
Cement, grouted in metal lining	14,380	"
Cement, grouted in bulkheads	26,510	"
Cement, grouted in test holes	28,550	"
Cement, grouted in pipe supports	2,000	"
Cement, total in grout	117,980	"
Cement, total in concrete and grout	344,600	"

[fol. 2213] In this undertaking the cost of construction must be classed in two accounts: first, the cost of the shafts and tunnel constructed under normal conditions in the two types of rock formation; and, second, the extraordinary cost and expense of that portion of tunnel, approximately 400 lin. ft. constructed in the decomposed rock formation. The cost of the permanent pipes and interior equipment is an additional and entirely distinct item of expense, bearing no direct relation to the cost of the structure of the tunnel.

It is worthy of note that the unit costs, based on all work of a normal character, with the sole exception of the great expense of getting through the decomposed rock, was less than the originally estimated figures contemplated at the commencement of the work. The unusual conditions involved in that portion of the tunnel driven through the decomposed rock formation, and the long delay in conquering the difficulties which arose, involved an actual cost for that section materially greater than had originally been allowed.

Tables 8 and 9, showing the distributed unit costs for the shaft and normal tunnel constructions, are of interest and value, and show advantageous results under the condition governing the work. The unit costs given in these tables are

*Tons of 2,000 lb.

the total for both labor and material, allowing 60% of the purchase value of plant and equipment—the remainder being considered as a credit for ultimate salvage. The item "Contingencies" includes all expenses chargeable to accidents, damages, hospital, rentals, insurance, and operation of the ferry-boat used between the shaft.

[fol. 2214] Table 8—Unit Costs of Shaft Construction—Normal Conditions

Cost per Actual Cubic Yard

	Rock excavation (gneiss)		Concrete lining	
	Astoria shaft	Bronx shaft	Astoria shaft	Bronx shaft
General supervision	$0.114	$0.120	$0.130	$0.120
Engineering expense	0.193	0.204	0.221	0.205
Field office administration	0.808	0.853	0.922	0.855
Plant and equipment, installation and maintenance	0.346	0.368	0.396	0.366
Plant and equipment, 60% of purchase value	0.867	0.915	0.990	0.917
General surface labor and supplies	0.354	0.373	0.451	0.375
Drilling and blasting	1.971	1.571	1.083	1.283
Mucking	1.652	1.797	.....	.....
Disposal, surface transportation	0.484	1.592	.....	.....
Disposal, scow line and towing	0.149	0.101	.....	.....
Power and plant running	1.625	1.343	.....	.....
Making and sharpening steels, and repairing machines	0.420	0.376	.....	.....
Lighting	0.157	0.171	0.134	0.161
Extending lines (air, pump, etc.)	0.173	0.124	0.100	0.098
Pumping	0.301	0.439	0.234	0.207
Contingencies	0.817	0.879	1.113	1.078
Forms and platforms, making, setting and removing	.....	.....	2.389	1.902
Use and waste of lumber	.....	.....	0.300	0.294
Handling materials	.....	.....	0.519	0.341
Sand	.....	.....	0.264	0.424
Cement	.....	.....	1.898	1.807
Stone	.....	.....	0.836	0.806
Mixing concrete	.....	.....	0.784	0.779
Transportation	.....	.....	0.055	0.069
Placing concrete	.....	.....	1.342	1.650
Cleaning up	.....	.....	0.045	0.091
Totals	$10.431	$11.223	$14.206	$13.759

[fol. 2215] Table 9—Unit Costs of Tunnel Construction Normal Conditions

Cost per Actual Cubic Yard

	Rock excavation		Concrete lining
	Gneiss	Dolomite	
General supervision	$0.087	$0.069	$0.064
Engineering expense	0.151	0.121	0.127
Field office administration	0.629	0.503	0.464
Plant and equipment, installation and maintenance	0.283	0.226	0.209
Plant and equipment, 60% of purchase value	0.662	0.529	0.488
General surface labor and supplies	0.327	0.261	0.326
Drilling and blasting	1.997	1.672	.....
Timbering	0.005	0.001	.....
Mucking	1.736	1.213	.....
Disposal, tunnel and surface transportation	0.795	0.748	.....
Disposal, screw line and towing	0.279	0.249	.....
Power and plant running	1.262	1.055	1.256
Making and sharpening steels, and repairing machines	0.285	0.306	.....
Lighting	0.158	0.152	0.183
Extending lines	0.139	0.112	0.161
Pumping	0.152	0.116	0.147
Contingencies	0.761	0.626	0.984
Wood forms, making, setting and removing	.....	.....	0.857
Steel forms, making, setting and removing	.....	.....	0.125
Steel forms, charges	.....	.....	0.353
Use and waste of lumber	.....	.....	0.187
Handling materials	.....	.....	0.332
Sand	.....	.....	0.323
Cement	.....	.....	1.918
Stone	.....	.....	0.891
Mixing concrete	.....	.....	0.487
Transportation	.....	.....	0.702
Placing concrete	.....	.....	1.709
Cleaning up	.....	.....	0.270
Totals	$9.708	$7.989	$12.563

* * * * * * * *

[fol. 2216] By Mr. Donnelly:

In the paper that I prepared and read before the American Society of Civil Engineers, and which paper is now Defendant's Exhibit No. 21, I stated that rock excavations in the shaft was carried out under normal conditions, and gave the cost, page 661, Table 8, as $10.82 per cubic yard.

As to the reason for the difference between that item in Exhibit No. 836, which counsel for the defendant Attorney General stated was given as $40.50 per cubic yard, or three and three-quarters times the original cost of the work, I said that none of the figures were comparable. None of the figures in the unit costs

in any case, in any part of this paper, are comparable with the units as they are presented in Exhibit 836. The items are not the same.

Referring to item 3 in Plaintiff's Exhibit 836, of $40.50 per cubic yard, just three and three-quarter times $10.82, the average or the mean for the item given in Tables 8 and 9, whereas, Item 4, in Exhibit 836 is given at $43 per cubic yard, and the unit price in Tables 8 and 9 is given at $8.85 per cubic yard, or $4.85 times, there are a great many omissions entirely from the final actual cost in those tables; and the same ratio of increased cost should not be applied to these items because the system of measurement was different in the two cases, on account of measuring to payment lines for the estimate of reproduction; whereas, the other was the actual amount that was then actually taken out and which differs; second, the question of hazard which a contractor would incur and would allow for and figure upon, which did not happen to occur in the actual work of construction as it was constructed. Ex- [fol. 2217] plaining what I meant by omissions in the figures in the tables in my paper, the estimates on reproduction assume contractor's profit, which I have already stated, and that the work would be done under a contract awarded. No allowance is made in the tables in this paper for any contractor's profit. There is no allowance in the tables for State liability insurance. There is no allowance for the financing costs of the contractor. There is no allowance for surety bonds which are necessary under any contract awarded, and various other items that enter into the estimate of the cost of reproduction in the manner already testified, which do not occur in any of the tables in this book, irrespective of the changes in prices. All those things such as I have characterized as omissions are considered in arriving at unit prices that are applied to the Exhibits 836 and 837. I could not undertake to take any one of these unit prices as typical and split up what I allowed for each one of those items. In making up my unit prices I grouped them all and made allowances in arriving at the unit price figures that I had given in my appraisals, as to what I thought was a fair and reasonable figure for the class of work to be executed. The factor of a percentage

to represent those things that I have characterized as omissions was not taken by me in making up my unit price figures.

The same answer that I gave to a similar preceding question would cover, as far as they go, the question why the same factor of increased cost should not be used for tunnel concrete as is used for shaft concrete, as stated in the recital that in Table 8, on page 661, the cost of concrete in the Astoria Shaft is $14,206 and for the Bronx shaft $13,759, the average of the two being $13.98 per cubic yard, and in Exhibit 839 this is given as $23.40 or 1.67 times the original cost, and that, in the same paper, Table 9, on page 662, the cost of tunnel concrete in sound ground [fol. 2218] is given as $12.563, and in Exhibit 836, Item 7, this cost is given as $32 per cubic yard or 2.54 times the original cost. Further, the conditions under which the concrete is placed in the two items, tunnel concrete and shaft concrete, are utterly different. In this paper, at the bottom of page 660, I stated "It is worthy of note that the unit cost based on all work of a normal character, with the sole exception of the great expense of getting through the decomposed rock, was less than the estimated figures contemplated at the commencement of the work."

[fol. 2219] New York, June 4, 1924.

Met pursuant to adjournment.

Charles E. Trout, called as a witness in behalf of the plaintiff, being duly sworn, testified as follows:

Direct examination by Mr. Ransom:

I am a civil engineer in the firm of Henry Steers, Inc., contracting engineers, at 17 Battery Place, New York. Dock building is their principal business.

I graduated from the Massachusetts Institute of Technology in 1896. Following my graduation, I held minor engineering positions in the Boston Sewer Department, and in the Bureau of Yards and Docks, United States Navy. From 1900 to 1905, I was employed as draftsman and designer for the Department of Docks of the City of New

York. From 1905 to 1917, I was Division Engineer in the New York City Dock Department, and had charge of surveys and dredging operations and the supervision of water front work done by private owners, the layout of plans for improving the City's water front, etc. From 1918 to 1919, I was in charge of all water front work in connection with the construction of the U. S. Army supplies base in South Brooklyn. Since 1919, I have been employed as engineer for Henry Steers, Inc., contracting engineers and dock builders.

I have designed, made bids for, purchased materials and employed labor for, and supervised the work of construc-[fol. 2220] tion of bulkhead walls, piers, warehouses, ferry structures, and other water front improvements.

I have been employed to and did make appraisals of water front structures, buildings and improvements, and testified as to such appraisals in the matter of acquiring property for the U. S. Army supply base in Brooklyn; the matter of acquiring property of the Astoria Ferry, Astoria, Long Island, by the City of New York; the matter of securing piers 1, 2, 3, 4 and 5 North River by the City of New York; the matter of acquiring property of the American Docks, Staten Island, by the City of New York; and the matter of acquiring property of East 10th and 23rd Street Ferry Company at Greenpoint, Long Island. I am a member of the American Society of Civil Engineers, and hold certificates from the States of New York and New Jersey to practice professional engineering and land surveying.

I was connected with the work of building a concrete platform or pier and bulkhead wall at Luyster Creek, at the property of the Astoria Light, Heat & Power Company. I drew the plan in accordance with instructions as to the designs that were given to me by Mr. W. Cullen Morris, and I made up the bid on the work and bought such material as we did not take from stock. I was not the field superintendent, but I had active charge of the work from the office. That applies to all the work we did at Luyster Creek. My company was the contractor.

I have been and am familiar with the market prices of material and the rates of pay for labor entering into the

construction of similar platforms and bulkheads, piers, docks, walls and other water front structures, at such prices [fol. 2221] and rates of pay prevailed in the City of New York on or about June 1, 1923. I have necessarily kept myself informed as to such market prices of materials and rates of labor. I am all the while buying those materials and watching the prices on them and on wages. Of course, most of our labor is under contract with the Unions, and I am necessarily familiar with those wages, and as to unorganized labor, I am in close touch with that too. So that in 1923 and at the present time, I have been in close touch with labor rates.

The labor required for constructing platforms and structures similar to those at Luyster Creek is of a special class. The peculiar conditions which affect the work of constructing such a platform and concrete bulkhead wall which do not arise in the construction of ordinary buildings and improvements on the land, are: The wall at Luyster Creek is built on piles that are cut off one foot above the low water line. That cutting can only be done when the tide is down. That gives a very short period for men to work during the times when the piles are being cut off and during the time when the timber is being placed on top of the piles, and it also gives a very short time for the placing of the concrete slabs which have to be placed while the tide is out. All of those things necessitate specially skillful men, and necessitates the extra cost of the work, because, as a general thing, there is not enough for the men to do while the tide is up. You have to have the men there in order to get the work done when the tide is out. You cannot lay them off three quarters of a day and employ them for the other quarter. It is those necessities and that kind of work that [fol. 2222] makes the cost high. Those were the conditions actually encountered in our work there.

At the request of the Astoria Light, Heat & Power Company, I made an inventory and appraisal of this bulkhead wall and the platform as of June 1, 1923. I took the complete plan of the work and took the quantities off it and made a table of those quantities, and placed my estimated costs of labor and material opposite those quantities and carried them out and added a percentage for towing and

scow hire and supplies and added the necessary percentage for liability insurance—public liability and employees' liability insurance, and a percentage for insurance and a percentage for profit. The prices that I applied to the quantities were on or about June 1, 1923. In my opinion, the prices which I applied for the material and labor entering into the construction of the Layster Creek bulkhead wall and platform were reasonable prices as of that time in the City of New York. In making the appraisal, I assumed that the contractor would be employed either by the company or the general contractor, and that we did the work as a subcontractor. This estimate which I have made is made upon what is known in my busines as a subcontract basis.

As a result of my inventory and appraisal, I prepared a schedule setting forth the details of my inventory and appraisal on this structure. In this appraisal the items or elements which are covered by the figure which I have noted as "Overhead ten per cent" are office expenses, yard and store room expenses, upkeep of plant, interest and discount—the general expenses of a contractor's organization. By that I mean the subcontractor. The item which I have [fol. 2223] in there of "Subcontractor's profit" is ten per cent of the total cost of labor and material, towing and scow hire and such incidentals and liability insurance—ten per cent of the contractor's actual cost. That represents the net earnings of the job to the subcontractor. In my opinion, and according to my experience, the two percentages to which I have just referred are reasonable and necessary. The rate which I have shown of 4.2895 for employers and liability insurance is the rate we were paying for employers and public liability at that time, June 1, 1923. It was substantially the established rate. The various insurance companies do not charge quite the same to everybody. You have a performance rating, I think they call it, or experience rating, which they deduct from what they call their manual rating, so everybody does not pay exactly the same. It depends on the results of the work, and that figure is what we were paying at that time.

My company had a favorable experience rating. The deduction from the manual rating was large. The manual

rate is 9.82, and our experience rating was 5.75, making our net 4.1050 for the employers liability plus 1.845 for public liability, or a total of 4.2895. That is what we were actually paying as of June 1, 1923, for these insurance items. In my appraisal I did not include any elements of cost or any allowance or provision for administration expenses or legal expenses, or land and easements or taxes on the cost of the financing of the project or interest thereon.

This schedule correctly sets forth the inventory and ap- [fol. 2224] praisal of this bulkhead wall at Luyster Creek and the appurtenance structure, as testified to by me, and the amount stated as the total represents what, in my judgment, is the amount of the reasonable and necessary cost to reproduce that structure as of June 1, 1923.

I would expect the present reproduction cost of this structure on the basis used by me in the appraisal as of June 1, 1923, including the same elements and taking into account the present prices of labor and materials, would be higher than what I have shown as the reproduction cost as of June 1, 1923. That is, the cost of labor is up considerably. The cost of most materials is down a little, but some are still up over 1923. On the whole it would cost more to-day than a year ago.

I made a recent examination of this structure. I looked at it yesterday afternoon and examined it closely. I have seen it at other times since June 1, 1923, and I have seen it at frequent intervals; at no regular intervals, but I have been there off and on. On the occasions of the examinations, I found the structure as good as new, and it has been at all times, except for one accident when a ship ran into it, and which has since been repaired. The repairs upon this structure to which reference was made here a day or two ago were made by me or by my company under my supervision. I think the ship "Michael Tracy" ran into it and damaged it; it was a severe but very local damage. That was entirely repaired and the wall was replaced exactly as [fol. 2225] it had been. I should say that as of yesterday it was in perfect condition and as good as new.

There is nothing else like this bulkhead wall or structure in any place nearly so heavy, that I know of. It is a special structure specially designed to carry that heavy unloading machinery.

While it acts also, of course, as a retaining structure, its main function and its main elements of cost are due to the fact that it has to carry those enormous cranes. It is virtually a platform for water work machinery. At the time that we built this present structure, all along the Luyster Creek side—that is, about half the total wall—there was a bulkhead more or less of the usual type. They called it the dyke, I think. It was a perfectly good retaining structure and a good wharfage structure. That had to be removed. It was worthless for carrying these cranes.

My inventory and appraisal as of June 1, 1923 of this structure is true and correct on the basis which I have testified.

(Inventory and appraisal received in evidence and marked Plaintiff's Exhibit No. 860.)

June 4, 1924.

[fol. 2226] COLIN C. SIMPSON, a witness in behalf of plaintiff, recalled.

Direct examination continued by Mr. Ransom:

I prepared a diagram which shows by suitable key designations the mains of the Consolidated Gas Company jointly used in its service and in the service of other gas companies and also the mains of affiliated gas companies on the transfer system which were jointly used by those companies and by the Consolidated Gas Company, identifying such mains with Mr. Woods' joint facilities report. And on this diagram I have shown the identity of the ownership, the sizes of the mains and their general description and location in such a way as to identify them with the description of such mains in Mr. Woods' report and testimony, and with the other exhibits that are in evidence. I have done that by suitable key numbers on the particular facilities on the map referred to a key which is at the bottom of it. This map shows all of the jointly used mains which have been referred to in my exhibits and testimony and in Mr. Woods' joint facilities reports and testimony.

(Received and marked Plaintiff's Exhibit No. 861.)

To distinguish between one and the other, I have the facilities grouped and treated in the same way as in the Woods report. They are small distribution mains the property of the Consolidated Gas Company, which are used by the Central Union Company and rented to them, and they are just this group of mains here (indicating on Exhibit 861). It was more or less disconnected for the reason that they tied up with certain Central Union mains. They [fol. 2227] are still our property and are rented to them. They are all numbered "5" on the diagram, but they are three sizes and I indicated that to show what they consisted of. But I might say, that the most northerly portion of the line up to this break is a 24. From the Harlem River to the break in the line is a 24, and the next section is a 20, and the rest, the east and west is 8. The parts that extend east and west and are marked "5" are eight inches. As to 6, 7 and 8, this of course, includes the two 36-inch tunnel mains, and the land connections, and they are all 36 except a portion of this westerly No. 6, which is 30. I think it is 59 feet all told. It is only a portion—59 feet of the north and south; land connection there. As to the 7, there are two sizes there—48 and 60. The southerly portion of the elbow is 48, from the point marked "Ridge Street" to the point marked "Hancock Street" where it crosses Webster Avenue, this is 48. The rest is all 60. No. 8, the portions between the large circles denoting the tunnel shafts are 72. That is marked on the map, and the land connections are 48 from those 72. This 48 at this point indicates the northern end of the 7. I omitted to state that the connection between the 60 on Winthrop Avenue in the tunnel head is also 48, marked "7" up to this point (indicating). I followed in my grouping and my keys and key numbers the grouping that is used in the Woods reports as units. That is, the mains that I placed together are treated as units for purposes of the joint facilities reports. At the point on this diagram, Plaintiff's Exhibit [fol. 2228] 861, sway to the right, where the figure "4" appears in the circle and then right below that, Decatur Avenue and Fordham Road—that main stops there and ties in with the 20-inch Northern Union main at that point. The 20-inch Northern Union runs up Webster Avenue, all the way from the Webster Avenue holder. It runs post that

point at Decatur Avenue and Fordham Road. A little bit to the left of that the map is marked out Southern Boulevard and Tremont Avenue. That means that the 36-inch main stops at that point there likewise, and that connects with a 20-inch Central Union main which runs north and south down the Southern Boulevard for a portion of the way. That "5" crosses the Harlem River. There is a Consolidated main crossing the Harlem River at that point. "5" ties in and becomes a part, so far as the actual use is concerned, of the distribution system of the Central Union Company in that vicinity used by them exclusively. "5" is valved off at the river. It is an emergency connection across the river.

By the Master:

And here directly at the other end of that section of "5" and at these other points where there are breaks in the lines indicated by the figure "5," there are connecting or intermediate sections of mains of the Central Union Company. The "5" entirely connects with the Central Union and is used by them exclusively.

By Mr. Ransom:

"5" is in no way used directly in serving consumers of the Consolidated Gas Company connected with it by services. It is rented entirely to the Central Union and I believe paid for by them and owned by the Consolidated. But new construction in that neighborhood has been by the Central Union Company.

By Mr. Donnelly:

The name of the avenue just a little to the left of [fol. 2229] the point indicated as Decatur Avenue and Fordham Road is the 36 on Valentine Avenue. The Consolidated has no consumers in the Bronx. The Central and Northern Union Companies maintain the mains and bill us for such repairs on them.

By Mr. Ransom:

In Exhibit 268, which sets forth my inventory and appraisal of the mains owned by the Consolidated Gas Com-

pany, I included the mains owned by the Consolidated Gas Company which Mr. Woods testified, as shown by his report, are used in whole or in part in the service of other companies. Those jointly used mains belonging to the Consolidated Gas Company are part of the total length of mains of the corresponding sizes shown in my Exhibit 268. I segregated from my Exhibit 268 the mains referred to in Mr. Woods' testimony and report and shown on this diagram just received in evidence as belonging to the Consolidated Gas Company and used in whole or in part in the service of consumers of other companies. I have prepared a schedule showing such segregation. I had previously presented schedules which showed such reproduction costs and such segregation as to mains owned by other companies but used in part or wholly in the service of Consolidated consumers. That was Plaintiff's Exhibit 855. I have prepared a similar schedule with respect to mains owned by the Consolidated but used wholly or in part in the service of consumers of other companies. And these lengths and these costs and prices are a part of the costs [fol. 2230] that are shown in Exhibit 268, and at least many of these items of mains can be identified in Exhibit 268, but I have brought them together in one exhibit. I prepared schedule entitled "Reproduction Cost of Labor and Material Necessary for the Laying of the Mains of the Consolidated Gas Company of New York which are used in whole or in part by other Companies as of June 1, 1923." This is made up in the same general form and on the same basis as my previous exhibits. The unit labor and material costs for each size of such main are those shown in Exhibit 268 and are not repeated here, and these figures include the same items and exclude the same items which were included or excluded in 268. Referring to the first item on this statement, described as "48-inch Connecting Main, Size 48-inch, Length of Feet in Manhattan 18,581 feet, and Length of Feet in Bronx 7,578 feet," and assigning a reproduction cost as of June 1, 1923, that 48-inch Connecting Main is a part of the 48-inch main shown in my Exhibit 268. That part of the 48-inch Connecting Main is the main which is shown on Plaintiff's Exhibit 861 as Item 1, and the main runs from the 71st Street Tunnel Head to the 132nd Street Tunnel Head on Avenue A, First Avenue,

Pleasant Avenue, and various other streets, crossing the Harlem River through the Standard 48 inch Harlem River Main; then on Lincoln Avenue and 134th Street, Locust Avenue and 132nd Street, to the Tunnel Head in the Bronx. That is, it runs from the Astoria Tunnel Head House at 132nd Street in the Bronx to the Ravenswood Tunnel Head House at East 71st Street in Manhattan, exclusive of this [fol. 2231] part under the Harlem River which is owned by the Standard Company. Of this connecting main between the two tunnel head houses, the length shown on this schedule is in Manhattan and the Bronx. I have separated it between the two boroughs, and then applied the unit prices applicable to that size of main in the respective boroughs to reach the reproduction cost figure which I have given. And as to the other mains referred to in this statement, they are the jointly used mains of the Consolidated Gas Company which are described in Mr. Woods' report and were included in my inventory and appraisal in Exhibit 268 and which are shown on Exhibit 861. And this is a correct segregation from Exhibit 268 of the reproduction cost of the labor and material necessary for the laying of these particular jointly used mains of the Consolidated Gas Company as of June 1, 1923. (Received and marked Plaintiff's Exhibit 862.)

By the Master:

In this table, Exhibit 862, those mains are all on this map shown on Exhibit 861. The first item is under No. 1 key, the second item under No. 4, the third under No. 3, and the fourth under No. 5. In so far as the heading "Properties Included in the Woods' Report" is concerned, there is a heading at the right there "Property that is not included in the Woods' Report." Those are transfer mains of the other companies that are not jointly used. But the four items on the left hand side are the other four, and are covered on Exhibit 861, and are jointly used.

Astoria Tunnel, Cast Iron Mains and Connections, the [fol. 2232] first item here is No. 8 on the key. The Ravenswood Tunnel Cast Iron Mains and Connections are No. 6 on the key. Cast Iron River Mains owned by the Standard Company is No. 2 on the key. Cast Iron River Mains owned by the Standard Company is No. 2 on the key; and

the Steel Main and Cast Iron Main 60 and 48 owned by the New Amsterdam Company in Long Island City is No. 7. This makes four items on Exhibit 855 owned by other companies and four items on Exhibit 862, owned by the Consolidated Company, making a total of eight. These two exhibits, Nos. 855 and 862, cover all the mains shown on Plaintiff's Exhibit No. 861. They cover all the mains jointly used. And these mains on Plaintiff's Exhibit No. 861 are all jointly used.

Cross-examination by Mr. Donnelly:

These figures on Plaintiff's Exhibit No. 862 are not in addition to the figures heretofore given by me in Plaintiff's Exhibit No. 268, but are part of the figures in Plaintiff's Exhibit No. 268. They are merely a segregation of such of those total mains as are jointly used. On Plaintiff's Exhibit No. 268 I can give the cost of pavement over the mains indicated on Plaintiff's Exhibit No. 862, with reference to each diameter. That is, the amount of pavement paid for by the company over each one of the mains. That is on Plaintiff's Exhibit No. 862. On No. 1, which is the 48-inch connecting main, by its short title, and which is the first item on Plaintiff's Exhibit No. 862, the total amount of pavement there is $89,490.63—that is included in the figure for the 48-inch main shown on Plaintiff's Exhibit No. 862, of $1,471,190. It is the amount paid for by the company, [fol. 2233] reproduced as of June 1, 1923, that is included in this particular main. When I gave my estimates that are included on Plaintiff's Exhibit No. 268, there was no particular reason for omitting the cost of pavement there; I gave the cost of pavement for every size of main, and the quantity of pavement. On Plaintiff's Exhibit No. 268, the cost of pavement over the mains, of various diameters, set forth on Plaintiff's Exhibit No. 862, are shown in gross, but it covers more mileage and sizes than shown on Plaintiff's Exhibit No. 862. I laid the mains and I knew the amount of pavement laid when the mains were laid, and I picked up this particular amount of pavement. These are not taken from the company's books; they are taken from our own engineering records of the amount of pavement put down when the mains were laid, the amount of pavement that was disturbed. It is also shown in the company's

books because the pavement at that time was a different price than it is now. The Accounting Department gets a bill for pavement. *The Accounting Department gets a bill for pavement.* The Accounting Department gets the information given as to the amount of pavement laid over mains from the bills, and not from me. We do not do any paving ourselves. The $89,490.63 is not taken from the contractor's bills, because as I say, the pavement was laid some years ago when the pavement was at a different price than it was on June 1, 1923. I have taken the actual quantities and applied the June 1st prices. Today's prices are higher. That is, we took the actual quantity of pavement disturbed.

[fol. 2234] The Engineering Department does not have anything to do with the mains, if by that is meant the Construction Department. The bill gives the quantity also of pavement over mains. Gaffney, Uvalde, all of them, (contractors) will bill us a certain price for pavement at so much per yard. The amounts paid for pavement over mains refer to that part of Plaintiff's Exhibit No. 268 which begins, "Plus reproduction cost of pavement paid for by company over mains," etc. It is some $600,000 in there, and of that $600,000 a certain portion is on these mains, of which I have given one item of $89,490.63. That six hundred thousand odd set forth on Plaintiff's Exhibit No. 268 covers all of the pavement over all of the mains of the Consolidated Company, including the mains of the diameter set forth on Plaintiff's Exhibit 862. And the sum that is stated on Plaintiff's Exhibit No. 268 is a lump sum, without any attempt to segregate that and apportion the amount to each diameter of main over which there was pavement laid and a cost for pavement involved. On the 20,406.50 feet of 36-inch main, which is Item No. 4 on Plaintiff's Exhibit No. 861, we draw a total blank on pavement. We were not able to find any, so there is none on that Exhibit 862. There was some actually disturbed, but there was not any way that I could absolutely, identify it. I laid the main and I remember disturbing some, but I did not have a record of it. Of course, there is none for that same main in Plaintiff's Exhibit No. 268, either.

We have the 48-inch main, which is marked 3 on the key.

[fol. 2235] 30,105 feet. I would have to add two items here

(witness makes computation). That is $54,799.64. That is asphalt on concrete, granite on concrete, granite on sand, macadam, and another item of asphalt on concrete. With reference to that 48-inch connecting main, there is granite on sand, asphalt on concrete, granite on concrete, macadam, and asphalt on stone. That is asphalt laid on the old flat stone blocks. I think that is all, except Item 5, the small mains in the Bronx. Item No. 5 corresponds to the 8-, and 20- and the 24-inch, set forth on Plaintiff's Exhibit No. 862. There was no pavement on those that I was able to establish and no pavement included in this figure, and no pavement included in Plaintiff's Exhibit No. 268. That covers it all. Those figures that I have just given to represent cost of pavement over mains were reached by taking the quantities and applying the prices of labor and materials as of June 1, 1923.

Redirect by Mr. Ransom:

Plaintiff's Exhibit No. 862 takes out of Plaintiff's Exhibit 268 all of the elements of cost—labor, material and other expenditures—which are attributable to the jointly used mains of the Consolidated Company.

By the Master:

The map diagram, Plaintiff's Exhibit No. 861, shows all of the mains jointly used, by whomsoever owned. The Woods facilities report and Mr. Woods' testimony give the proportionate use of those mains by the different companies. It shows the extent of use by each of the companies. [fol. 2236] Plaintiff's Exhibit No. 855 gives my estimate of the reproduction cost of the mains of other companies jointly used by the Consolidated. And Plaintiff's Exhibit No. 862 gives my estimate of the reproduction cost of the mains of the Consolidated jointly used by other companies.

Recross by Mr. Donnelly:

As to who maintains the mains shown on Plaintiff's Exhibit No. 862, the 48-inch connecting main is in Manhattan, and that is maintained directly by th Consolidated Company; the 36-inch distributing mains in the Bronx, which are Item 4, the actual labor and material for any repairs and maintenance is done by the Central Union and Northern

Union Companies under my direction, I have full charge of that as well as everything else; the 48-inch transfer main in the Bronx—and this is equally true in a great many cases—on a major repair our company sends men of my own up there on any of those jobs. They are mains which other companies make some use of, but as they are our property, if repairs are made the repairs are billed to us by the other companies. We do not directly maintain the 8-, the 20- and the 24-inch mains shown on Plaintiff's Exhibit No. 862. The maintenance is charged to us. There is joint use in Manhattan of the 48-inch connecting main, which is the first item on Plaintiff's Exhibit No. 862, exactly as set forth in the Woods' Report.

[fol. 2237] Redirect by Mr. Ranson:

The Central Union and Northern Union Companies, insofar as they do any work of repair or maintenance on those mains that are located within the Borough of the Bronx and that belong to the Consolidated Company, bill the Consolidated for the labor and materials and the cost of such work.

By the Master:

It is the general practice that the company in whose territory the main is maintains it and the company that owns it pays for the maintenance.

New York, June 5th, 1924.

Met pursuant to adjournment.

[fol. 2238] Alton S. Miller, a witness on behalf of the plaintiff, recalled:

Direct examination resumed by Mr. Ransom:

In my inventory and appraisal of the property of the Consolidated Gas Company as of June 1st, 1923, which has been marked in evidence as Plaintiff's Exhibit No. 856, referring to Sheet 2 thereof, which brings together with respect to the Consolidated the value of the property as of June 1, 1923, exclusive of going value and the other ele-

ments indicated in the footnote, I use the value of the land as testified to by Mr. Robert Huntley and have prepared a corresponding summary sheet including for the land the amount testified to by Mr. Stevens as to the parcels concerning which he testified and inserting those items in place of the Huntley figures, so that if it were desired to ascertain the results where the figures testified to by Mr. Stevens with respect to land were used, this Sheet 2-A would be considered in place of Sheet No. 2, in Plaintiff's Exhibit No. 856. This sheet marked page 2-A, entitled "Value of the Property of the Consolidated Gas Company of New York Used in its Gas Business as of June 1, 1903," is exclusive of going value and the other items which are indicated, a summary of the value of such property, assuming for land the amount testified to by Mr. Stevens, and assuming for all the other items with the exception of the undistributable structural costs the same amounts which were shown in my Sheet 2 of Plaintiff's Exhibit No. 856. As to the amounts for the items of undistributable costs on this sheet they were determined by me in the same manner as I [fol. 2239] determined the amounts for undistributed structural costs in Exhibit 856. This Sheet 2-A contains a correct statement of the inventory and appraisal upon the basis of Mr. Stevens' valuation of the parcels of land testified to by him.

(Sheet 2 A was received in evidence and marked Plaintiff's Ex. 856 A.)

I have prepared a sheet which shows the details and derivation and basis of computation of the undistributable structural costs and overheads, the items of taxes, and the item of working capital, which enters into my summary sheet, page 2 in Exhibit 856, based on the value of the land as testified to by Mr. Huntley. I could testify to each of the matters and thing- herein set forth with respect to the bases of computing those overheads or undistributable costs, the elements of taxes during construction, and the working capital. And in this first sheet I have taken the items of undistributable structural cost and taxes on a basis of computation which included the values of the land testified to by Mr. Huntley.

(The paper referred to was received in evidence and marked Plaintiff's Ex. 863.)

I also prepared a similar detailed sheet in respect of the undistributable costs and overheads, taxes during the construction period, and working capital, basing my computation of the undistributed costs and taxes on the values of parcels of land testified to by Mr. Stevens in this case, and this shows the same details with the basis of computation changed in that single respect.

(The paper referred to was received in evidence and marked Plaintiff's Ex. 864.)

In connection with my examination of the property of the plaintiff Consolidated Gas Company I ascertained what work it would, in my judgment, have been necessary to do upon the apparatus and equipment included in my statement of inventory and appraisal in order to put all of the same in condition as if new as of June 1, 1923.

[fol. 2240] Late in May and early in June of last year I went through the plants of the company and made an examination of the different pieces of apparatus, making notes of the conditions as near as I could observe, talking to the superintendents and operating men. At a later date, that is, within the last three or four months, I had those notes taken out and went again to the superintendents and the operating men, including the Construction Department, looked up to see what work had actually been done, how that checked with my original observations, and where work that I felt should be done in order to put the property in the condition in which it was when new had been finished, I got as nearly as possible the actual cost of doing that work. When much work had not been done I made an estimate as to what it would cost to do such work, and brought the estimated costs where it had not been actually done, or the actual costs where it had been done, together, and detailed it as shown in this appraisal. The basis of my determination of what work was necessary the examination which I myself made was prior to or about June 1, 1923. The work comprehended in putting the property in condition in which it was when new, is in general the painting, replacing worn parts, and in some cases damaged parts. For example, broken parts, and, as I recollect it, a holder, for instance, had been damaged by ice on one occasion, and replacing the damaged part of that holder, includes whatever from

an actual engineering point of view I find is necessary or [fol. 2241] proper to that end, to put a piece of apparatus or equipment in the condition in which it was estimated as being a new piece of apparatus. This is restoration according to the present design where there is any possible variance between the original design and the present design. As the result of this examination I made an estimate of the expenditures necessary in my opinion to put the apparatus and equipment in condition as if new. I prepared a schedule setting forth my estimate on the expenditures to which I have referred and this is such statement. I have set forth in the first instance a summary giving a total for the various stations and holder stations of $546,407.06 and then I subsequently gave the summaries by stations. With respect to each of the stations I have given the details and the amounts which I have sent forth the sum which in my judgment and according to my experience it would cost to do the indicated work. This is schedule a correct statement of what expenditures in my judgment would be necessary in order to put the apparatus and equipment inventoried and appraised by me in the condition in which the same were when new.

(The schedule was received in evidence and marked Plaintiff's Ex. 865.)

I made an inventory and appraisal of the apparatus and equipment at the plant of the Astoria Company in Astoria as of June 1, 1923. In making the inventory and appraisal of the apparatus and equipment of that Company as of June 1, 1923 I followed the same general method that I used in making the inventory and appraisal of the apparatus and equipment of the Consolidated Company and which I have already described here in detail. I embodied the results [fol. 2242] of that inventory and appraisal in the same general form. For the items of property which consist of meters, cocks and so forth, tools, and implements, gas appliances, general equipment and furniture and fixtures of the Astoria Company, I took them from the books of the company. To satisfy myself that the reproduction cost of those items as of June 1, 1923, would be no less than the amount shown upon the books, I looked up the character of the items and satisfied myself that most of the ex-

penditure had been made at a period of much lower prices and that present prices of the same items would be materially in excess of—the value united as shown on the books and the present value would be in excess of that amount. In respect to several of those items just referred to their entire amount covering all of them was small, and particularly small in proportion to the great numbers of individual items, so that it was hardly worth the expense of trying to get a complete inventory of all the detailed items. And yet as to some of the items, for example, tools and implements, there would be a large number of units. After I had completed my inventory and appraisal of the apparatus and equipment, I brought together into a summary sheet my own inventory and appraisal with the inventory and appraisal of land, building, mains, services, as testified to here by Messrs. Huntley, Burt, Simpson and Trout, and added to such appraisal the undistributable structural costs [fol. 2243] in the same way as I did with respect to the property of the Consolidated Gas Company concerning which I have already testified in detail. That is, my method of making up the summary was the same as I have already testified. I set forth my inventory and appraisal in a schedule entitled "Inventory and Appraisal of the Property of the Astoria Light, Heat & Power Company used in its Gas Business as of June 1st, 1923." The document which was shown me was correct statement of such inventory and appraisal. The appraisal represented what in my opinion was the reproduction cost of the property of the Astoria Company as of June 1, 1923, assuming for land the market value testified to by Mr. Huntley, for buildings the reproduction cost of materials and labor testified to by Mr. Burt, for the Luyster Creek platform and bulkhead wall the reproduction cost as testified to by Mr. Trout, for mains and services the reproduction cost as testified to here by Mr. Simpson, and for the items of meters, cocks, and so forth, tools and implements, gas appliances, general equipment, and furniture and fixtures, the amount shown for these items on the books of the Astoria Company. Upon the basis stated by me it is my opinion that the value of the property of the Astoria Light, Heat and Power Company used in its gas business as of June 1, 1923, is the total amount set forth on the summary sheet, page 2 of this document.

In this Astoria inventory and appraisal I have shown [fol. 2244] this general summary sheet as to the value of all the property which is numbered page 2, then I inserted explanatory notes with respect to the items of working capital and with respect to the various undistributable structural costs. If you asked me the appropriate questions my testimony with respect to each of these items would be what I have set forth here in these notes in summary form. On page 9 and 9-A I have given a general summary of costs of buildings and structures related to the apparatus and matters appraised by me. Then beginning with sheet 10 through sheet 194 consecutively numbered I have shown the details in the same manner that I have already testified to with respect to my detail sheets as to the Consolidated.

(The inventory and appraisal of the property of the Astoria Light, Heat and Power Company used in its gas business as of June 1, 1923 received in evidence and marked plaintiff's Exhibit 866.)

[fol. 2245] Similarly, with respect to the property of the Astoria Company used in its gas business as of June 1, 1923, I have prepared a summary of the value of such property as of June 1, 1923, exclusive of going value, such summary, being made up on the same basis as Sheet 2 of Exhibit No. 866, except that I have shown therein the value of the land of the Astoria Company as appraised by Mr. F. K. Stevens instead of the value testified to here by Mr. Robert Huntley. Exclusive of going value this summary sheet is correct on that basis. With respect to the items of property other than land and except for undistributed structual costs, I have taken the items of property in this summary sheet 2-A and the same sums shown on page 2 of Plaintiff Exhibit No. 866. The items of undistributed structural costs I have included in the same way.

(Summary of the value of the property of the Astoria Light, Heat and Power Company as of June 1, 1923 on the basis of the land value testified to by Mr. F. K. Stevens received in evidence and marked plaintiff's Exhibit 866-A.)

During my examination of the property of the Astoria Light, Heat & Power Company I observed with respect to

its condition and maintenance and I found the property to be in first class condition, well maintained and in operating [fol. 2246] condition as good as new. I made an examination to determine what expenditures would be necessary on the apparatus and equipment of the Astoria Light, Heat and Power Company to place them in a condition as new. I made such examination in the same manner that I testified, I made in respect to the apparatus and equipment of the Consolidated Gas Company. I set forth in a list or statement what expenses in my judgment were necessary as of June 1, 1923, to place such apparatus of the Astoria Light, Heat & Power Company in condition as when new. This is a true and correct statement of such expenditures according to my judgment, as of that date. I have shown a summary relating to the apparatus and equipment of the various structures corresponding in grouping to the summary given in Plaintiff's Exhibit No. 866 and then in the [fol. 2247] succeeding sheets I have given the details of the work necessary and the reasonable and necessary cost of doing such work.

(Statement entitled "Expenses necessary to put the works of the Astoria Light, Heat and Power Company in the condition they were when new," received in evidence and marked Plaintiff's Exhibit 867.)

I have prepared an inventory and appraisal of the property included in the 62nd Street holder station of the Standard Gas Light Company as of June 1, 1923 and followed the same general method in making that appraisal as I did in making the appraisal of the Consolidated Gas Company and of the Astoria, Light, Heat & Power Company to which I have already testified here. I set forth my inventory and appraisal of that property under a schedule. In this schedule the sheets which are marked 5 to 15, contained in the folder endorsed, "Value of property of the gas companies affiliated with the Consolidated Gas Company jointly used [fol. 2248] with the Consolidated Gas Company of New York in its gas business as of June 1, 1923," comprise my inventory and appraisal of certain property at the 62nd Street holder station of the Standard Light Company as of June 1, 1923. In this appraisal comprised on sheets 5 to 15, both inclusive, I assumed for the item of lands and build-

ings the amounts testified to here by Mr. Huntley and Mr. Burt. And this total amount shown on page 5 represents what in my judgment was the reproduction cost and value as of June 1, 1923, of the indicated boiler and governor-house at the 62nd Street holder station of the Standard Gas Light Company, upon the basis stated by me inclusive of going value exclusive of the holders themselves, the holders not being jointly used. The basis of the apportionment of property to the use of the Consolidated Gas Company referred to in the note on page 5 with respect to the 62nd Street holder station was the apportionment used by Mr. George E. Woods in this 1923 Joint Facilities Report. I applied the same percentage which is used in that report. Referring to the schedule entitled, "Value of the property of the Astoria Light, Heat & Power Company, used in its gas business as of June 1, 1923," there I have taken the value of the property of the Astoria Light, Heat & Power Company as shown on Exhibit No. 866. From that I have deducted that portion of the property used for storing coal for other companies than the Astoria Light, Heat & Power Company, the Luyster Creek property and also the mains, services, meters and gas appliances used by the Astoria Light, Heat & Power Company in its own gas business—that is, in the selling of gas. To the few consumers which it has. [fol. 2249] Then I have taken, as being used for the Consolidated Gas Company of New York, 80.0744419 per cent of that difference as being used by the Consolidated Gas Company of New York. That percentage was derived from the Woods report. On Sheet 1, I have taken the total value of the Astoria Light, Heat & Power Company as shown by Plaintiff's Exhibit No. 866 and have deducted the value of the part of the Luyster Creek coal handling property which is devoted to other companies as already shown in this case, and have also deducted mains, services, meters and gas appliances used in serving the consumers of the Astoria Light, Heat & Power Company, and then have applied to the remainder the percentage shown in the Woods' report. With respect to page 2, I have shown the details with respect to the Luyster Creek coal handling property and the portion devoted to the use of other companies as previously testified to herein. All of the figures in this schedule, where land is involved, are based on the value

testified to by Mr. Huntley. On Sheet 3, I have shown the details with respect to the mains, services, meters and gas appliances of the Astoria Light, Heat & Power Company that are used in the service of the Astoria Light, Heat & Power Company's own consumers. On Sheet 4, I have shown the value of the 48-inch Harlem River main of the Standard Gas Light Company as of June 1, 1923, on a reproduction cost basis including undistributed structural costs and apply to it the percentage of use by the Consolidated Gas Company of New York shown in the Woods' report. Sheets 5 to 15, both inclusive relate to the 62nd [fol.2250] Street boiler house of the Standard Gas Light Company concerning which I have already testified. They include also the holders, but the holders have been deducted. I have also shown the reproduction cost of these properties as of June 1st, 1923, including undistributed structural costs, and I have similarly computed the portion devoted to the Consolidated Gas Company on the basis of the percentage of the Woods' report. On Sheet 16, I have similarly shown the value of the 48 inch and 68 inch mains in Long Island City and Astoria which are the property of the East River Gas Company, and have shown their reproduction cost and value as of June 1, 1923, and that includes undistributed structural cost, there I have applied the percentage derived from the Woods' report and shown the portion devoted to the use of the Consolidated Gas Company of New York. On Sheet 17 I have similarly shown the value and reproduction cost as of June 1, 1923, of the Astoria Tunnel and the Ravenswood Tunnel of the East River Gas Company, based on the Huntley figure as to the land and Mr. Burt's testimony as to the buildings and the Davies' testimony as to the tunnel itself and the Simpson's testimony as to the tunnel equipment, and the undistributed structural costs applied by me, and to that I have applied the percentage in the Woods report devoted to the Consolidated Gas Company with respect to each of the items in this schedule they represent the reproduction cost of that property as of June 1, 1923. This folder correctly sets forth my inventory and appraisal of the properties affiliated with the Consolidated Gas Company and jointly used with the Consolidated Gas Company in its gas business as of June 1, [fol. 2251] 1923, upon the basis testified to by me. This

being such a schedule based on the use of the valuations placed upon the land by Mr. Robert Huntley.

(Statement entitled "Value of Property of the Gas Companies affiliated with the Consolidated Gas Company jointly and with the Consolidated Gas Company of New York in its Gas business as of June 1, 1923," received in evidence and marked plaintiff's Exhibit 868.)

I have prepared a similar schedule to Exhibit No. 868 on the same basis and in the same way, except that I included the land at the figures testified to herein by Mr. F. K. Stevens instead of the figures testified to by Mr. Huntley, which were used in Plaintiff's Exhibit No. 868. In other respects this exhibit is prepared in the same manner and is true and correct on that basis.

(This schedule received in evidence and marked Plaintiff's Exhibit 869.)

I made an examination of the East 62nd Street boiler and governor house of the Standard Gas Light Company [fol. 2252] to determine what expenditures were necessary as of June 1, 1923, to put that property in a condition as good as new. I set forth in the schedule "Expenditures Necessary to put the 62nd Street Boiler and Governor House of the Standard Gas-Light Company in the condition in which it was when new," the items and the amounts representing my estimate of such reasonable and necessary expenditures. This is a correct statement as a result of my examination. This was made up in the same way as I have testified to previously with respect to similar exhibits as to the Consolidated Gas Company of New York and the Astoria Light, Heat & Power Company and it represents my judgment as to the expenditures necessary and as to the cost of the work that is necessary at that property as of that date.

(Statement entitled "Expenditures necessary to put the 52nd Boiler, and Governor House of Standard Gas Light Company in the condition it was when new" received in evidence and marked Plaintiff's Exhibit 890.)

The folder entitled, "Value of the properties of the Consolidated Gas Company of New York, jointly used with its

affiliated companies in its gas business as of June 1, 1923," [fol. 2253] was prepared by me. In it I segregated the portion of the properties of the Consolidated Gas Company which were included in my Exhibit No. 856, and which Mr. Woods has testified were jointly used by the Consolidated Gas Company and its affiliated gas companies. I have shown in this statement the amounts as appraised by Mr. Simpson and as shown in his exhibit, the buildings as appraised by Mr. Burt, land as appraised by Mr. Huntley, undistributed structural costs as testified to by me and percentages of use as shown in the Woods' report as testified to by Mr. Woods. I have not included going value as to any of these properties, or franchise value. My undistributed structural costs were made up in the same manner as to which I have previously testified. These figures, in my judgment, represent the reproduction cost of these properties as of June 1, 1923 exclusive of going value in each instance.

(Statement entitled "Value of Property of Consolidated Gas Company of New York jointly used with the Affiliated Gas Companies in its Gas Business as of June 1, 1923," received in evidence and marked Plaintiff's Exhibit 871.)

I prepared in this same manner and covering the same properties their reproduction cost as of June 1, 1923, Schedules identical with Exhibit No. 871, in the manner in which they are made up, except that land is taken at the figures testified to by Mr. Stevens. In other respects the exhibit is made up in the same way, and the figures from the Woods' report as to percentages of use are identical and the undistributed structural costs are computed and the present value reached in the same way.

(The said Schedule was received in evidence and marked plaintiff's Exhibit 872.)

With respect to the East 62nd Street Holder Station property, I think we have got that in. The expenditures are in. It was well maintained and substantially in the condition it was when new. The Holder Station property [fol. 2254] was operating efficiently. There was no impairment of operating efficiency with respect to that. From my previous exhibits in evidence, I have prepared a summary

which, exclusive of going value, states the value of the property used by the Consolidated Gas Company of New York in its gas business as of June 1, 1923. I have prepared in the first place a sheet which summarizes those figures as to the various properties upon the basis of using as to land the appraisal of land by Mr. Robert Huntley. This is a true and correct summary from my previous exhibits; it correctly shows the total present value, exclusive of going value, upon the basis of the Huntley appraisal of land; Plaintiff's Exhibit No. 873, which reads as follows:

Value of the Property Used by the Consolidated Gas Company of New York in Its Gas Business as of June 1st, 1923

Property of affiliated gas companies used by the Consolidated Gas Company of New York:		
Astoria Light, Heat & Power Company	$37,984,438.25	
48-inch Harlem River Main	206,269.03	
62nd Street Boiler & Governor House	121,413.67	
48-inch and 60-inch Mains in Long Island City	839,208.32	
Astoria and Ravenswood Tunnels	8,742,186.64	
		$47,953,455.91
Property of Consolidated Gas Company of New York used by affiliated companies:		
48-inch Transfer Main	$669,525.03	
48-inch Connecting Main	891,969.64	
36-inch Distributing Main	920,167.50	
10,000,000 cu. ft. Holder and Accessories at Kingsbridge	1,159,704.50	
Small Mains in Bronx	145,687.00	
		$3,790,053.17
		$44,163,402.74
Value of the Property of the Consolidated Gas Co. used in its Gas Business as of June 1st, 1923		$147,434,251.00
		191,597,653.74

The appraisal of land by Mr. Robert Huntley was used [fol. 2255] in the above values.

I prepared also a summary of the property used by the Consolidated Gas Company of New York in its gas business as of June 1st, 1923, exclusive of going value, upon the same basis as Plaintiff's Exhibit No. 873, but using as to land the valuation placed upon such land by Mr. F. K. Steven. This is a true and correct summary from my previous exhibits, on the basis of Mr. Steven's value of the land, Marked Plaintiff's Exhibit No. 874 which reads as follows:

Value of the Property Used by the Consolidated Gas Company of New York in Its Gas Business as of June 1, 1923

Property of affiliated gas companies used by the Consolidated Gas Company of New York:		
Astoria Light, Heat & Power Co.	$37,096,334.47	
48-inch Harlem River Main	266,209.63	
62nd Street Boiler & Governor House	121,413.67	
48-inch and 60-inch Mains in Long Island City	839,208.32	
Astoria and Ravenswood Tunnels	8,730,393.96	
		$47,053,559.45
Property of Consolidated Gas Company of New York used by affiliated companies:		
48-inch Transfer Main	$669,525.03	
48-inch Connecting Main	894,969.64	
36-inch Distributing Mains	920,167.00	
10,000,000 cu. ft. Holder and Accessories at Kingsbridge	1,149,924.00	
Small Mains in Bronx	145,687.00	
		$3,780,272.67
		$43,273,286.78
Value of the Property of The Consolidated Gas Co. of New York used in the Gas Business, as of June 1, 1923		146,738,078.00
		$190,011,364.78

The appraisal of land by Mr. F. K. Stevens was used in the above values.

I have stated in my schedules of the inventories and appraisals of the properties of the Consolidated Gas Company, the Astoria Light, Heat & Power Company, and the [fol. 2256] Standard Gas Light Company that my appraisals are exclusive of any element of going value. The figures given in Plaintiff's Exhibits Nos. 873 and 874 as to property used in the Consolidated Gas Company's gas business does not include any item of going value. In my opinion there is an element of value in an assembled and established plant and system engaged in the gas business and earning money, over the same or a similar plant and system not thus advanced and yet in operation. This element of value exists in the case of the gas properties used in the gas business of the Consolidated Gas Company. In the course of my experience and studies of the properties of public utilities and their values I also examined into the cost of placing an assembled and established plant and system upon an operative basis as distinguished from the

same plant and system not yet in operation. The elements of the cost in establishing the business of a gas plant and system, after the plant and system have been physically constructed as set out in my previous exhibits, is first the organization of the property itself, that is, the cost of making minor changes in the physical property, to make it efficient in operation. Second, the cost of organizing the personnel; that is, starting with a new and uncoordinated staff and making an efficient coordinated operating staff, that including of course all employees of the company. This expense is shown not only in the increased labor during the earlier period of operation, but also due to the increased cost of materials used, and to some extent to the damage to the property while the new men are learning the business thoroughly and learning to operate it efficiently. Then there is the cost of advertising and canvassing in connec- [fol. 2257] tion with the appliances and meters, and the cost of special concessions made in order to build up the business quickly, and the cost of adjusting appliances and teaching the people how to use the appliances efficiently. There is a cost of organizing and coordinating the property and the plants and the distributing system, and bringing it all to a point of efficient operation, after it has been built and there is a cost of assembling and organizing and training the staff and personnel and getting the personnel to the point of cooperative and harmonious and economical operation. In my previous exhibits I have not set out the cost of constructing all the property, the replacement cost of all of the property in serving consumers of the Consolidated Gas Company, including undistributed structural cost. The items of cost which I have set out in those exhibits do not include all of the items of cost that I would have in reproducing the property and system and enterprise as it stands today, or as it stood as of June 1st, and actually costs money. These things which I have enumerated actually cost money. It would cost money to replace them if I were replacing them as of June 1 or as of the present time. Those elements of present replacement of those items enter into the going value of a gas property and enterprise such as the Consolidated Gas Company of New York. The element in the organization and development expenses

prior to construction differ from the elements entering into the going value in that the former relate entirely to the investigations and the cost of organizing the company to get ready for construction, and have no relation to any operating conditions, except to a forecast of what the operating conditions are likely to be. The going value or the elements that I have included in going value are the elements [fol. 2258] of attaching the business and making an efficient operating concern subsequent to completion of construction. Our organization and development expenses are not expenses which arise after the plant has been assembled and after the property has been completed so that it could begin to do business. The elements which enter into going value are elements of expense which arise after the completion of construction. They proceed from or constitute a part of the process of getting the business and coordinating the property and personnel. In other words there is no duplication between going value as described by me and the elements which I have set out as undistributable structural costs prior to or during construction. I have formed an opinion as to the value on or about June 1, 1923, of the element which I have testified to exist and to have existed—that is, the element of the value of the plant and system of the plaintiff as an assembled and established plant and system doing business, over the same plant and system if not yet operated. The amount representing the element of value for the plaintiff's property and business is, in my opinion $19,100,890. That sum represents my opinion and judgment. That is a sum which is the result of some basis of computation or calculation that is used by me in reaching it. Different persons in the gas and other public utility fields may have different units or formulas or different basis of computation, but they would include the same elements, and it is our estimate of the cost of reproducing those elements. It may be estimated in a somewhat different way, but they all go back to the same fundamental and underlying conditions. They may apply them to different units or may have different ways of estimating, as all engineers [fol. 2259] I think do. But those are the elements and in my judgment that is the result and the aggregate sum as to

the plaintiff's gas business. There would be a replacement cost of those elements in at least the sum which I have stated.

Cross-examination by Mr. Donnelly:

I made an inventory and appraisal of the property of the New York Mutual Gas Light Company which is known as the 11th Street station in this pending action. It was made in 1920—latter part of 1919 and early 1920, and based as of October 1, 1919. It included the part, that is, the New York Mutual properties that are included in plaintiff's exhibit 856. It is possible, there may have been some additions that were made to that New York Mutual property since my appraisal in 1920. I am not quite sure about that.

We do a great deal of the engineering work for the company, drawing plans for the various pieces of equipment, [fol. 2260] etc. I do not mean when the orders for these various pieces of equipment are placed with the Bartlett-Hayward Company, it is part of our duty to draw the plans for such equipment, we will go a great deal further than that. They will get us up there and the Engineer of Construction will say, "I am considering a certain plan." He will be very specific—take the work we contracted for about a year ago at 21st Street. He says, "I am considering a plan to handle the cost in a different manner at 21st Street and put in some extra machines. Now, I want you to work out a location for those coal bins and want you to work out a method of handling coal in the most economical manner to those bins and then come back and talk to me about it. So it devolved on us, under that request, to locate the machines in the building, to work on a plan by which the coal could be handled with a minimum investment and with a minimum cost of operation, and then the contract was given us to make those installations. So that we did in that case the engineering work as well as the contracting work. The company has a limited number of engineers and when they get crowded they use their friends. In connection with those orders that would be placed for this equipment, in the carrying out of the company's orders, my drafting force, under my supervision generally, prepared very complete drawings of the equipment, I hardly

go into any great detail. I just hit the high spots. I have a very large corps of engineers before I get to the draftsmen—a very large corps of engineers who study it on the ground and who are between me and the draftsmen. I generally give them the instructions as to how the drawings are to be made. For instance, I will pick out an engineer and I will give him just a part and say, "Work out [fol. 2261] that for me." And perhaps there will be a dozen drawings he will bring in before any details are prepared; that is, a dozen rough drawings. And finally, I pick out one, I say, "That is the scheme. Develop that." Now, that engineer himself will not do any drawing. He goes down to the draftsman.

These reproduction estimates which have been set forth in Plaintiff's Exhibit No. 856—and the same thing applies to the other reproduction estimates in our exhibits which have been put in through me this morning—have not been prepared by me upon the basis of an instantaneous theoretical as distinguished from an actual physical reproduction of the plant and equipment, exactly as they are, using the same kinds and quantities of materials and labor, at the prices prevailing for labor and material as of June 1, 1923. It is based on an actual physical reproduction of this prop- [fol. 2262] erty during a period of two years, which is the minimum, of course, at the prices prevailing as of June 1, 1923. Taking a period of two years within which to reproduce the items set forth in Plaintiff's Exhibit No. 856, and in the other exhibits which contain reproduction estimates. These estimates have been prepared reproducing the kind and quantities of material as they are there now. I did not make any assumption as to when that two year period would begin and when it would end. Answering your question as to whether there has been any substitution for any of those materials.

Speaking of the item on page 2, "General equipment," including office and stable equipment, and —, I simply took a figure of $831,523, from the company's books. I made an examination or check to determine the accuracy of those figures only in so far as to determine that there was a large amount, and that that had been brought forward from a period previous to 1916 and to satisfy my-self that the inventory at this time would bring a higher price

[fol. 2263] by reason of the change in prices. I simply examined the company's books to see that the figures had been brought forward, and I have checked that in this way, that is to compare the amount invested in that with other companies, so as to satisfy myself that the total amount was reasonable for the business done. I made a personal examination of whatever may be included in that characterization of "general equipment" only in so far as I came in contact with the equipment during my inventory—during the work I was doing—not specifically for that purpose; I never made a detailed list of it. I did not make an examination or investigation to ascertain the number of automobiles included in that item. Still referring to page 2 I estimated the item of omissions and contingencies at $909,930, that figure is the estimate of manufacturing plants and holder stations—5 per cent of that. They are the third and fourth items set forth on page 2.

A very small extent of my figure of $909,930 is intended to cover omissions from inventory, a small amount in percentage, I would say. I think I found an error of about $70,000 or $80,000 in the price of some benches. That percentage of omissions from inventory was not much—no, it is right hard to say. The only item I know of now is $70,000 or $80,000 for the benches; that is, my exhibit is say between $70,000 and $80,000. I do not think there are any large omissions of units themselves. There are omissions of prices, but not of units. Anything that has been omitted I have intended to cover by omissions from inventory. The actual illustrations of that would naturally be *guages* or lengths of pipe—the large units. By units I mean *guages*, the pieces of pipe, exhausters, pumps or tanks, items of that kind. I do not think I would leave out any generators or holders. Those are almost too big to be lost, but there may be pumps and tanks and engines and blowers or mod-
[fol. 2264] erate sized units, they might be, that were overlooked when I made my list—if there are any. The estimate is intended to cover that, partially. I do not know that it would be entirely, but if there is any, I hope it is sufficient to cover it. I am not able to say definitely in this regard, just how much in money of the estimate of $909,930 is intended to cover omissions from inventory—it is small. I should say that the amount is not sufficient to cover the omissions. The very largest amount of our estimates for

omission and contingencies is intended to cover the difference between the lowest guarantee price and what the market price is that you would have to pay when you come to build. It is utterly impossible to buy everything, in a large construction such as like this, at the lowest market price and get it when you want it, without having to follow it up by telegraph, and making personal visits and so forth, and the largest part of it is the difference between the lowest market price of every unit and what you would have to pay to get it. I refer in no way to the rise and fall in prices. I assume that the contractor would take this contract and complete the job at the prices as of June 1st. But a contractor knows, as everybody knows, that you cannot—when you place your contracts as of a specific date you cannot get deliveries as of the lowest market price of that specific date, and, whether the prices are going up or down you have the extra costs over the prices, the absolute minimum market prices, which have been used here, for prompt delivery and prompt delivery means overtime and night work. We have a large number of contractors doing [fol. 2265] work for us, and sometimes we must ask them to do extra work to get out of another contractor's way, and we must do an amount of bridging and special arrangements for material and all of that is above the minimum cost of any single item. It was my intentions in estimating omissions and contingencies at $909,930, to make up the difference, or at least a part of the difference between the lowest and actual market price in our individual items, actual market price of deliveries at the time you want them. I have not assumed any market price. I know as a matter of fact you cannot do it and you have to allow 10 to 15 per cent, but this is a minimum figure. That does not leave you up in the air to check if you have any engineers that are familiar with construction. But any engineer who ever done any construction could pick out from my detailed appraisal much of my individual items as would not be obtained at the lowest market price and therefore make it necessary for me to make adequate provision under the head of Omissions and Contingencies to cover my failure to get the lowest market price. You cannot pick out any individual item. There are a great many individual items in this Plaintiff's Exhibit No. 836, and that is the reason you cannot apportion it. I have been in

this business 35 or 36 years and have acquired considerable experience. I am willing to go on record as saying that I am not able to state from my experience just which of these things which are used in construction I have been unable to obtain at the lowest market price.

The item of Omissions and Contingencies likewise is intended to cover losses of certain materials during con- [fol. 2266] struction. Most of the materials which I have assumed would be lost during construction were brass goods which were stolen. That is during construction we have watchmen, they are watchmen that we can trust. I did not assume that the watchmen were in cahoots with the thief, but, if you had to have enough watchmen to save the brass goods it would cost us three times as much. You have to use some intelligence in these things. That is a matter of common experience. Then there is this stone and cement and sand which is lost—I mean, they are lost to some extent—and bolts and nuts and other small parts are lost and parts are broken during construction and must be replaced. Yes it would take a good deal of stolen brass to make up this $900,000 it would take $900,000 worth. This estimate of $900,000 and odd is intended to cover stolen brass, it is intended to cover anything stolen. I do not know how much of that estimate of $900,000 is intended to cover stolen brass. We do not keep account of what is stolen on a job. We keep accounts of what is lost, but we have no means of differentiating. None of this lost during construction was estimated by me to be lost during shipment. The railroad company or express company would be responsible for that. It is lost sometime after it was delivered on the job, and some of it actually in place is taken off. I do not think I said that part of the omissions and contingencies was intended to cover losses that would come because materials had not been delivered on contract time. I said it would cover the premium necessary to make prompt delivery, but do not think I said failure to deliver. The matter of prompt delivery is one that could be covered by contract and payment. You have got to pay it in money. I do not mean [fol. 2267] in all cases, of course; it depends on conditions. There are certain things that you can not always get immediate delivery or delivery when you need them and very

often things are promised and they do not come through and you have to pile them in the motor trucks instead of on trains, in order to get them. These are contingencies which may be guarded and protected against by contract, if you pay for it. I have not the slightest idea on what articles you have got to pay a bonus to get delivery on some of them. My experience does not enable me to tell on what details that statement that a premium would have to be paid, applies to.

By the Master:

I mean it might be on one particular item one thing and on another item another thing, according to the condition of the trade or business relating to some particular part and whether the order is in a particular plant at a particular time.

By Mr. Donnelly:

My estimate for the holders listed in Plaintiff's Exhibit No. 856, includes an allowance for cutting and waste. In other words nothing in my item Omissions and Contingencies is intended to cover the difference between the purchased and the finished weights of the holders, because that difference is taken care of in your estimate for the holders; I have already testified that the item Omissions and Contingencies relates to plant equipment and holders only. It does not relate to buildings, mains, services or gas appliances. I assumed that the contingencies causing the losses would occur over the period of construction assumed by me and as far as possible that the materials would be constructed for sometime in advance of the actual construction. I also assumed that the contract would provide for deliveries at times when the materials would be required. The contract for materials might or might not contain a clause to reimburse the contractor for any loss sustained by him by reason of delays in deliveries. If [fol. 2268] they do, then you pay a premium for it, provided there is such a clause in the contract. My estimates were made on the basis of the bids that we would be willing to submit, except that if we submitted a bid to do it we would want more for the omissions and contingencies. When a

contractor submits bids for this class of contruction it is not his practice to make up his unit prices in such a way as to protect himself against losses during construction such as I have assumed. My appraisals were not made upon the assumption that the contract for the work would contain a provision for the payment of a bonus if the work called for by the contract were completed before the time specified in the contract. One of the losses during construction including weather conditions and strikes, was assumed by me the loss due to unforeseen difficulties or conditions. In this connection I did not assume a liquidated damage clause in the contract providing for the payment by the contractor of a certain amount per day for every day beyond the contract time. All of the plants and foundries in the United States could not build this plant in four years, so there is no use talking about anything of that kind. I have just used two years as the basis here for the purpose of computing undistributed constructural cost, interest during construction, taxes, etc., but all of the plants in the country doing this class of work could not furnish the material if they stopped everything else—could not furnish the material and build Astoria and the Consolidated Gas plant in four years. So this two years is a mere nominal figure for the purpose of computing interest [fol. 2269] and taxes. In bidding for construction work of that character it is not the practice among contractors to assume that there is going to be a liquidated damage clause in their contract which imposes upon them a penalty for every day beyond the contract time taken by the work. Of course, they will take such contracts. When they take such contracts they will be paid for it. There is no amount that I have allowed in here to represent a payment for that type of contract. Five percent will not pay it. It won't pay for that part of it alone. I did not assume that the contract would contain a provision for an extension of time of completion of the work equal to the delays experienced in construction, because the contract might provide for delays caused by the owner of the property, but the general contractor certainly cannot ask for an extension of time due to any delays for which the owner is responsible. There are always delays in construction due to weather conditions and due to strikes. Those delays are

not excepted from the contract. It is a very common practice to put a clause in the contract that in the case of strikes the contractor is not responsible. The weather conditions are usually considered in the contract without any special reference, or may even be excepted. In the case of strikes or weather conditions the contracting parties would protect themselves, in a bonus or penalty, by clauses in the contract of a character such as this, for instance—that the delays ensuing because of strikes or weather conditions shall not be computed as part of the time within which the contract shall be completed. I do not know that I have ever seen any contracts for the doing of municipal work for the City of New York, but I take it it is the usual [fol. 2270] form. I think that the usual form is to provide for an extension of time equal to the delays experienced because of weather conditions strikes, or what are known as unforeseen difficulties and conditions, where there is a price in the contract covering a specific period with a penalty. But of course, there is no allowance in here for any amount to cover the general contractor for any such conditions. I did not testify that among the losses during construction that I assumed was loss due to the fact that cement or other materials, or a particular piece of machinery or equipment, did not come up to specifications, in which event there would be a delay and consequent expense. The largest item entering into my estimate of $909,930, for Omissions and Contingencies is not the item that provides for the difference between the lowest market price and what I would have to pay to ensure the prompt delivery of materials. I was probably mistaken there in my first statement. I think probably the delays due to labor conditions is a larger item than the item of chasing deliveries and premiums on deliveries and such things. I think that is probably a larger item. All these things could certainly be provided for and guarded against by provisions in the contract. You can provide against anything on earth if you pay for it; but I have not provided for it with a price here, and therefore it is not provided for. I can provide for it if you pay for it, and would.

On page 2 of this Plaintiff's Exhibit No. 836, for the item of Organization and Development Prior to Construction my estimate is $6,680,000. On page 5 of Plaintiff's

Exhibit No. 866 the costs cover the compensation on a reasonable salary basis for the services of the sponsers, sal-
[fol. 2271] aries of stenographers, clerks and other assistants. I have not subdivided my estimate at all of $6,600,000 covering the services of sponsors and the salaries of stenographers, clerks and other assistants. Probably no two groups would ever have the same amounts; it would vary in every case and I have not attempted to subdivide it. I did not assume any specific amount would be paid by the sponsors, but the rent would be paid for an office for use by the sponsers and their stenographers, clerks and other assistants. I did not make any assumption as to the location of that office, or as to how large or extensive the office or offices would be. I did not make any assumption as to the period of time that the rent would be paid, but it would be a long time, I take it, in view of the time that it takes to get things through the Board of Estimates. Regarding this item Organization and Development Expenses Prior to Construction, the Board of Estimate would have to pass upon the franchise. I understand that things are hung up a long time and that applications for franchises are hung up a long time in the Board of Estimate. That is one of the things that I assumed. I think quite a long period of time would ensue before the Board of Extimate and Apportionment granted the necessary franchise, since an application is now before the Board of Estimate for some years now, for a gas plant on Staten Island. There is a gas plant on Staten Island now, but not in the district as to which this application was made and that one is the plant of the New York & Richmond Gas Company. That company has a monopoly of the gas business
[fol. 2272] on Staten Island, because the Board of Estimate will not grant another franchise for the territory not occupied by the New York & Richmond Company. That application was made several years ago. I am familiar with the plant and property of the New York & Richmond Gas Company; that is one of the companies for whom I made an inventory and appraisal of its properties. In the pending litigation against this so-called Dollar Gas Law, I do not recollect the people who made the application for a franchise to operate another and independent gas company on Staten Island. The people who applied for it feel there

is need for another gas company on Staten Island; the sponsors of this company applied for it. I think the Public Service Commission feels so too, or at least it is my understanding. There was an application made by certain citizens of Staten Island for a grant of a franchise to another company. I do not understand that they are citizens who were affiliated with the promotion of the new company. I never went through the record. I know of other applications that have been delayed—an application for the sale of the Flatbush Electric Company has been delayed indefinitely, with no present prospect of being approved. There is no specific period that would be taken in the organization and development, that it was based on the long delays which would come with the Board of Estimate and Apportionment, was one of the items. You say how long would they require the office. I say for some time, because it would take a long time to get it through the Board of Estimate. I do not know how long. These are the only two that I have been enough interested in to look up. I see by the newspapers that frequent complaints are made of [fol. 2273] the inaction of the Board of Estimate, but they are not things in which I am particularly interested, and have no relation to this kind of an enterprise, as far as I know.

I assumed that these plants and properties covered by Plaintiff's Exhibit No. 856 would be located where they are now, the nature of traveling expenses that I assumed would be incurred, were such expenses as would be necessary in investigating facilities of contractors, designs, methods in use elsewhere, and a general study of the business in other places with a view to determining the methods, for building the plants in New York and the methods we followed in securing the business in New York, that is, the conduct of investigations and looking over the plants in various parts of the country. And maybe abroad. It is very common practice to go abroad and look up plants before making extensions or building to any large extent. That is not a question of locating them, it is a question of designing them. The types to build, in other words, I assumed this was a brand new enterprise. That is the whole basis of this estimate, as I have explained. That is to say, that no gas plant had been located on Manhattan Island.

I have been familiar with the layout of the plants on Manhattan Island since the time that I began my association with the East River Company longer than thirty years ago, and I have been and am familiar with the growth and the development of the gas business upon Manhattan Island during all of that time. Because of these facts if I were to reproduce these plants as they are now it would not require me to spend much time in preliminary studies of gas plant construction elsewhere, but, it would, to reproduce [fol. 2274] these plants as a new enterprise. I still say it would require investigation and study of the design of other gas plants in other part- of this country and of Europe or abroad if I were to reproduce them as a new enterprise. I won't say that on June 21st, 1923, the business of the gas companies operating upon Manhattan Island, since 1884, the year in which the Consolidated Gas Company came into existence had been a steadily increasing one. I know that it is much greater now than it was in 1884, but my impression is it has not been a steadily increasing one. It has been entirely changed in its entire nature since 1884. I know that certainly some years the sales have been below previous years. The business of selling and delivering gas to consumers upon Manhatan Island has grown though not steadily, since 1884, so that I think today there is five or six times as much gas sold by the Consolidated Company as there was in 1884, thanks to the efforts—because the business they had in 1884, the lighting business, is dead; that is all gone. This is now a new business since 1884, due to the development of the fuel business of gas. People are using gas now almost entirely for cooking and domestic purposes and industrial uses and the lighting business that they had in 1884 has now almost entirely disappeared. The population has not been steadily increasing since 1884. Manhattan Island has decreased for some years. I do not know when the decrease did take place. It started some five or six or seven years ago, I think. It is my understanding that on Manhattan Island there is a less number of human beings living here than there was seven years ago. [fol. 2275] I assume that a very complete study would be made before the promoters or the sponsors would be prepared to advise the financing of such a company. I assume that a complete study of the earnings per dollar invested, the earnings per head of population, and the cost

of the prospective dollar of earning would be very important in originating such a property. Insofar as these studies that I have just narrated are concerned, I do not know that the City of New York would be directly comparable with any other city in the U. S. At the same time the knowledge of the others would be of some value. I remember trying to compare it with the West broke the East River Gas Company. All such knowledge would have a value, even though it is not directly comparable. The design, operating costs, capital, earnings—a study of the business as a business. Investment and operating costs and probable return—a study of the entire business.

I am not designing a new gas plant, but reproducing these gas plants exactly as they are, with the same materials that are there, with the same type of equipment that is there, and so forth, so far as possible. If we did not have the plant and were going to reproduce it, we would not advice reproducing it until we could show what other people were doing, what the probable earning would be and back up our statements.

By the Master:

This is my statement of what it would cost anybody to reproduce here.

By Mr. Donnelly:

These appraisals represent what I would do the work for. Nobody could do it for less. Nobody could it do for any less than what I have set down here. In fact, I do not think you could ever get it done for this. I would not take a firm contract for this. In this reproduction I am not going to put in any equipment that is of a different design from [fol. 2276] the one that is there, that equipment varies all the time. There are minor changes from time to time. Generally, the big outstanding features are the same, just as the locomotive is the same as it was 40 years ago, and yet it is a very different piece of machinery.

Referring to the item, "Organization and Development Expense Prior to Construction" on page 5 of Exhibit 856, I do not know just exactly what the expense of obtaining a charter is. You would have to have an attorney to draw it and to make your application, and I do not know whether

there is any fee in connection therewith or not. I imagine there is an incorporation fee, but I don't know. By the charter I mean the incorporation of the company—its right to become a corporation as distinguished from the right to occupy the public streets with its gas main; that is entirely different. I assumed no specific sum for that, nor for the ordinance. The franchises, seven million and some odd thousand dollars, are not in this. I did not assume any specific sum for the expense incurred in obtaining the franchises, or the permits and local consents. If there is a fee for incorporation, or based on the capital stock, I assume that would be paid to the State. Generally these payments for franchises, local consents, permits would be paid to the attorneys and the newspapers, I should say; they would get the most of it. It is my understanding if you make an application for a franchise, the law requires that it be published so many times a week for so many successive weeks. I take it you would probably have other advertising, too, besides statutory advertising in order to accelerate public opinion and checked it up to give the franchises to deliver [fol. 2277] gas to the consumers. That is, to be in a position to deliver to the consumers. I assessed no specific sum for that purpose. If you only occupied the absolute public streets the consents of property owners are such as would be procured without payment. Generally there are enough places in the twilight zone where you have special permits. I don't know if there are any such on Manhattan Island. They are all public streets. As far as I know this Company has no mains on private property.

Still speaking of the heading "Organization and Development expenses prior to construction," we would probably consult accountants and people—probably local experts familiar with the ground or conditions and find out the physical conditions locally and find out accounting conditions generally with companies in order to determine what it would cost to open the books and keep our accounts, so that at least it would include local experts regarding ground conditions and it would include accountants and anybody else you happened to need, expert accounting advice regarding perhaps the investigation of somebody else's book to see whether they were earning what they claimed they were. That isn't covered in the same paragraph under the head-

ing of salaries of clerks and other assistants, to examine the books of other gas companies, to see how they kept their accounts and how their earnings were made up. If this plant was to be constructed in June, 1923 the Uniform [fol. 2278] System of Accounts tells how to keep the books, but, it does not tell the companies in Chicago how to keep the books, and I would want to examine them. But, insofar as learning how to keep the books is concerns, that would be governed by the laws of the State of New York, but I am not opening the books of the company and it requires an expert accountant to determine how those requirements should be applied to the books of the company. It requires an expert accountant to study the accounts in other cities and see what is in operation and how they would coordinate with the operating conditions here. I would have in mind most of the large cities. There is nothing directly comparable to the City of New York but it would give some information that would be useful: that is some information that would be useful upon the subject of the earning capacities of a gas company situated in other cities—I know what the gas companies of New York have earned in the City of New York but I would not know it if I was going to reproduce this under the conditions specified, and the conditions specified are a gas company that had never operated at all in the City of New York: it would cover the services of those whom we would want to have investigate the soil conditions here, get local advice on soil conditions in which no gas mains had ever been placed before. You would have to study the cost of laying the pipe in other cities, in connection with soil conditions, to get some idea about what it would cost to lay the pipe here, and you would probably get in touch with the contractors who are laying water pipes and get what information you could, all [fol. 2279] of which would be expert advice. In view of the fact that there had been a large number of sub-surface structures, excluding gas mains, from this question, done in the City of New York for a good many years back the same thing would not be done in New York as was done in other cities, because you would not have any gas pipes under this assumption and you would have to look up and see what gas pipes cost in other places as near as possible similar to those in New York. There are a good many places in the

United States that are not deserts that do not have gas, but there are not any large cities that do not have gas. There is not any large city in the United States that has not had gas for some years back. I am assuming that when the contractor started he would know what he was doing, but he would have to find out, though, before he started. He would have to find out by retaining these various classes of assistants. All of this work would be done before the contractor ever came on the scene. There is no contractor at all on the scene at this stage of the game, just the promotors at this stage of the game. They may retain the contractor as an expert, but there is not any here unless he is simply being retained as an expert.

On page 2 of Plaintiff's Exhibit No. 856 I have given our estimate of the cost of financing $6,900,000, and that figure covers the cost of raising $139,653,251 which I estimated to be the structural costs detailed in my appraisal, includes what it would cost to build the plant as a whole and it is a part of the structural cost in one sense, I mean in one [fol. 2280] definition of structural cost. In another definition it is not. The items which make up my estimate of $6,900,000 are largely made up of the amounts that would be paid to underwriters and the financial men who would sell the securities of the company. In addition, it would be the legal expense and the fees of drawing and printing mortgages and printing stock. But the large amount is the amount paid to the financial men for selling stock and bonds and legal expenses in drawing mortgages, fees to the trustees and the printing of mortgages, the printing of stock, and the fees to registrars. If my estimate for the cost of financing were for an established and going concern as distinguished from a gas plant about to be produced, my percentage for the cost of financing would not be less than I have given here. It might be greater. This is an absolutely minimum figure. This is not sufficient to cover construction enterprises, that I have here. I assumed that 543,254, consumers would be supplied by the gas company whose plant and equipment I assumed would be produced as of June 1, 1923.